APRIL 22, 1939

THE LANCET

Offices: 7, ADAM STREET, ADELPHI, W.C.2.

Telegrams: LANCET, RAND, LONDON. **Telephone**: TEMPLE BAR 7228 and 7229.

No. XVI., OF VOL. I., 1939. LONDON, SATURDAY, APRIL 22, 1939. Pp. 112—Price 1s.
No. 6034. VOL. CCXXXVI. Founded 1823. PUBLISHED WEEKLY. Registered as a Newspaper. Annual Subscription: Inland £2 2s. Abroad £2 10s

MAJOR ENDOCRINE DISORDERS.
By S. LEVY SIMPSON, M.A., M.D. (Cantab.), M.R.C.P.
"... of particular interest to the general physician."
Price 11s. post free. —LANCET, 28-1-39.
John Bale Medical Publications Ltd., 87, Great Titchfield-st., W.1.

BOOKS BY WILFRED HARRIS, M.D., F.R.C.P.

THE FACIAL NEURALGIAS .. .. 7s. 6d. net.
NEURITIS AND NEURALGIA .. .. 12s. 6d. net.
MORPHOLOGY OF THE BRACHIAL PLEXUS 25s. net.

Oxford University Press.

Free to the Medical Profession on request. Cloth bound Ed. 5s.
ARTIFICIAL LIMBS.
"SOLVITUR AMBULANDO."
A Symposium on Prosthetic Achievement.
Pp. 72. 37 Coloured Plates.
"I congratulate you on this interesting, instructive, and artistic production. I consider it to be a very great addition to my library."—M.B., Ch.B., F.R.C.S.
J. E. Hanger & Co. Ltd., 7, Roehampton House, Roehampton, S.W.15.

PROGNOSIS. VOLS. ONE AND TWO.
Price 10s. 6d. each net (postage 6d. each extra).
Companion Volumes to the "Modern Technique in Treatment" and "Clinical Interpretation of Aids to Diagnosis" Series.
The 124 articles of the series have been collected in book form in two volumes, which are fully indexed under titles, authors, and broadly classified into groups to facilitate quick reference.
The Lancet Limited, 7, Adam-street, Adelphi, London, W.C.2.

Second Revised Edition. 82 Illustrations. 30s. net.
CANCER OF THE BREAST AND ITS TREATMENT.
By W. SAMPSON HANDLEY, M.S., F.R.C.S.
John Murray, Albemarle-street, W.

3rd Ed., fully revised, 852 pp., 816 Illustrations.
EMERGENCY SURGERY. 50s. net; postage 8d.
By HAMILTON BAILEY, F.R.C.S.
Bristol: John Wright & Sons Ltd. London: Simpkin Marshall Ltd.

PROBLEMS OF
ANÆSTHESIA IN GENERAL PRACTICE
By D. H. LUKIS, M.D., B.S. Lond.
Late Hon. Anæsthetist, South London Hospital; late Clinical Assistant, Ear, Nose, and Throat Department, Queen's Hospital for Children, and Hon. Medical Officer, Kingston Victoria Hospital.
Demy 8vo. 7s. 6d. net (postage extra). 158 + vi pages.
Hodder & Stoughton Ltd., 20, Warwick-square, E.C.4.

9 Plates and 135 Text Illustrations. 15s. net; postage 6d.
DISEASES OF THE
EAR, THROAT AND NOSE.
By J. DOUGLAS McLAGGAN, F.R.C.S. Eng. and Edin.
London: H. K. Lewis & Co. Ltd., 136 Gower-street, W.C.1.

By H. CRICHTON-MILLER, M.A., M.D., M.R.C.P., Hon. Senior Physician, Tavistock Clinic.
PSYCHO-ANALYSIS & ITS DERIVATIVES.
Price 2s. 6d.
Thornton Butterworth, Ltd., 15, Bedford-street, W.C.2.

129 Illustrations (10 coloured). 12s. 6d. net; postage 6d.
DISEASES OF THE TESTICLE.
By HAMILTON BAILEY, F.R.C.S.
"... one of the best monographs we have read."—*British Journal of Surgery.*
London: H. K. Lewis & Co., Ltd., 136, Gower-street, W.C.1.

SELECTED WRITINGS OF
JOHN HUGHLINGS JACKSON, M.D., F.R.C.P., F.R.S.
Two Volumes.
I.—EPILEPSY AND EPILEPTIFORM CONVULSIONS.
II.—EVOLUTION AND DISSOLUTION OF THE NERVOUS SYSTEM: SPEECH: VARIOUS PAPERS: ADDRESSES AND LECTURES.
Edited by JAMES TAYLOR, M.D., F.R.C.P.
With the advice and assistance of GORDON HOLMES, M.D., F.R.C.P., and F. M. R. WALSHE, M.D., F.R.C.P.
Over 500 pages in each vol. Price 25s. net each; postage extra (inland 9d., abroad 10d.).
Hodder & Stoughton Ltd., 20, Warwick-square, E.C.4.

2nd Edn. 490 pp. 14 Plates. 297 Illus. 30s. net; post. 7d.
CYSTOSCOPY AND UROGRAPHY.
By JAS. B. MACALPINE, F.R.C.S.
"A credit to British surgery."—BRIT. JNL. OF SURGERY.
Bristol: John Wright & Sons Ltd. London: Simpkin Marshall Ltd.

DISEASES OF THE THYROID GLAND.
WITH SPECIAL REFERENCE TO THYROTOXICOSIS.
By CECIL A. JOLL, M.S., B.Sc., F.R.C.S. (Eng.).
Crown 4to. Fully Illustrated. £3 3s. net.
"Mr. Joll has presented his fellow practitioners and students with a monumental volume. They need not trouble to search the literature published up to the time this volume went to press, for they will find everything relevant within its covers."
—BRITISH JOURNAL OF SURGERY.
William Heinemann (Medical Books) Ltd., 99, Great Russell-street, London, W.C.1.

Second Edition. Published 13th April.
PRINCIPLES OF MEDICAL STATISTICS
By A. BRADFORD HILL, D.Sc., Ph.D.
Pp. 190 + viii. 6s. net.
The Lancet Limited, 7, Adam-street, Adelphi, London, W.C.2.

TWO NEW EDITIONS PUBLISHED BY SAUNDERS

Just Issued — **GONORRHŒA in the Male and Female** — New (3rd) Edition
"The book can be recommended to general practitioners as a sound practical guide."—*Indian Medical Gazette.*
"This is one of the sanest books we have read on this subject, as well as one of the most pleasant to read, so that we recommend it wholeheartedly."—*South African Medical Journal.*
By P. S. PELOUZE, M.D., Assistant Professor of Urology, University of Pennsylvania.
Octavo of 489 pages, 144 illustrations. Cloth, 27s. 6d. net.

Just Issued — **CLINICAL BIOCHEMISTRY** — New (2nd) Edition
"An admirable attempt to correlate the facts established in the laboratory with the problems encountered daily in medical practice."—*Brit. Med. Jour.*
By ABRAHAM CANTAROW, M.D., Associate Professor of Medicine, Jefferson Medical College, and MAX TRUMPER, Ph.D., formerly in charge of the Laboratories of Biochemistry, Jefferson Medical College and Hospital.
Octavo of 666 pages. Cloth, 27s. 6d. net.

W. B. SAUNDERS COMPANY, LTD., 7, Grape Street, London, W.C.2

LIBRARY MEDICAL DIVISION MAY 11 1939

ASTHMA IS DUE TO BRONCHOSPASM

but CAN be relieved WITHOUT NARCOTICS

•

The Felsol Treatment **provides a means of immediate relief by the taking of powders orally. FELSOL contains no morphia or other dangerous narcotic drug**

•

We shall be pleased to send you the fullest particulars of formula and action together with powders for clinical trial

Telephone : Clerkenwell 5862

BRITISH FELSOL COMPANY LTD.
Wigton House, 206/212, St. John Street,
Clerkenwell - - - - - London, E.C.1

Telegrams : Felsol, Smith, London

SYRUP PERTUSSIS GABAIL

An effective medicament for the paroxysms of

WHOOPING COUGH

Supplied in bottles of 125 c.c. *Literature and samples on request*

THE ANGLO-FRENCH DRUG CO. LTD., 11 & 12 Guilford Street, LONDON, W.C.1

PROCHOLON

CRYSTALLINE DEHYDROCHOLIC ACID

Procholon (Crystalline Dehydrocholic Acid Squibb) is a newly developed, unusually effective cholagogue and choleretic. It is supplied as 3¾-grain (0.25 Gm.) tablets. In proper dosage it not only induces evacuation of the gall-bladder, but increases the secretion of bile by direct stimulation of the hepatic cells. This latter effect is known as choleresis, a pharmacologic action not possessed by ordinary cholagogues.

For medical literature please write

E. R. SQUIBB & SONS DEPARTMENT of

SAVORY & MOORE LTD., 61, Welbeck Street, London, W.1.

APRIL 22, 1939

THE LANCET

A JOURNAL OF BRITISH AND FOREIGN MEDICINE, SURGERY, OBSTETRICS, PHYSIOLOGY, CHEMISTRY, PHARMACOLOGY, PUBLIC HEALTH, AND NEWS

No. 6034 LONDON: SATURDAY, APRIL 22, 1939 CCXXXVI

CONTENTS

THE WHOLE OF THE LITERARY MATTER IN THE LANCET IS COPYRIGHT

ADDRESSES AND ORIGINAL ARTICLES

The Approach to Medicine. By LORD HORDER, F.R.C.P. 913

Surgical Anatomy of the Subtentorial Angle. By Prof. E. P. STIBBE, F.R.C.S. (*illus.*) (*concluded*)..... 918

M. & B. 693 in Cerebro-spinal Fever treated under Field Conditions. By R. B. USHER SOMERS, M.B. 921

Chemotherapy of Cerebro-spinal Fever in the Field. By J. BRYANT, F.R.C.P.E., and H. D. FAIRMAN, M.B. 923

Anterior Dislocations of the Shoulder-joint. By C. H. GRAY, F.R.C.S. (*illus.*) 926

Herpes Zoster and Varicella Simultaneously in the Same Patient. By D. G. FERRIMAN, M.R.C.P. 930

Thrombocytopenic Purpura. By G. H. JENNINGS, M.R.C.P., and L. I. M. CASTLEDEN, M.R.C.P. 931

The Similarity of Stilbœstrol and Natural Œstrogenic Agents. By A. PALMER, M.D., and S. ZUCKERMAN, M.R.C.S. (*illus.*) 933

REVIEWS AND NOTICES OF BOOKS

A Glasgow Manual of Obstetrics. By Prof. Samuel J. Cameron, F.R.F.P.S.G., and others 935

Morphology of the Brachial Plexus. By Wilfred Harris, F.R.C.P. 935

The Surgery of Pain. By Prof. René Leriche. F.R.C.S. Translated and edited by Prof. A. Young, M.B. 935

Recent Advances in Forensic Medicine. By Prof. Sydney Smith, F.R.C.P., and Prof. John Glaister, M.D. 936

Chemistry of the Proteins. By Dorothy J. Lloyd, D.Sc., and Agnes Shore, B.Sc. 936

The Wheel of Health. By G. T. Wrench, M.D..... 936

LEADING ARTICLES

BLOOD AND VULCANITE.. 937

CHEMOTHERAPY IN CEREBROSPINAL FEVER 937

A MICRO-ORGANISM FROM RHEUMATISM 938

ANNOTATIONS

The Saving of Sight..... 939

The Kidneys and Exercise 939

Changes in Age-incidence of Diphtheria 940

Urea and Mercurial Diuresis 940

The Art and the Science.. 940

The Blood-flow through Muscle..... 941

Atomic Energy 941

A Tribute to Horsley..... 941

Diphtheria Toxoid Preparations 942

Physical Education in the Medical Curriculum 942

Anopheles in Brazil 942

Freedom, Discipline and Zest 943

A Journal of Endocrinology 943

Beds for Air-raid Casualties in Scotland 943

Spinster Motherhood in Germany..... 943

GRAINS AND SCRUPLES

From an Onlooker—IV... 950

NEW INVENTIONS

New Diathermy Sigmoidoscope (STANLEY O. AYLETT, F.R.C.S.) (*illus.*) 934

SPECIAL ARTICLES

Medical Referees under the Workmen's Compensation Acts. By Prof. J. A. NIXON, F.R.C.P. 944

Metabolism of Testosterone 948

Medicine and the Law: The Minority Judgment in Mahon *v.* Osborne... 949

Westminster Hospital: Opening of New Buildings (*illus.*) 955

THE LANCET 100 Years Ago 961

PANEL AND CONTRACT PRACTICE

Salvation through Soil—Dependants in War-time—The Mixture, as Before 952

PARLIAMENT

On the Floor of the House 956

From the Press Gallery: The Shortage of Nurses. 957

LETTERS TO THE EDITOR

Mental Nursing (Dr. Donald Blair)..... 958

Intussusception (Mr. Frank Forty, F.R.C.S.) 958

Life-story of Simple Herpes (Dr. S. M. Laird) 958

Sternal Puncture in Kala-azar (Prof. L. Everard Napier, F.R.C.P.) 959

Illness in Smallpox Contacts (Dr. M. H. Gordon, F.R.S.) 959

Infectivity Period of Catarrhal Jaundice (Dr. R. Lightwood) 960

Histamine and Urticaria (Dr. H. N. Hornibrook). 960

PUBLIC HEALTH

A New Waterworks Code.. 960

Infectious Disease in England and Wales.... 957

OBITUARY

William Hallock Park, M.D. 953

James William Edington, M.D. (*with portrait*).... 954

William Edward Sargant, M.R.C.S. 954

MEDICAL NEWS

Royal College of Surgeons of England 961

Pathological Research in its Relation to Medicine 961

British Postgraduate Medical School 961

Francis Amory Septennial Prize 961

Frederick Price Lectureship 961

The Heberden Medal 961

Postgraduate Lectures at Edinburgh 961

College of Nursing on Proposed Changes 961

Population of the Soviet Union 922

NOTES, COMMENTS AND ABSTRACTS

Doctor and Dentist: The Need for Coöperation. By LESLIE G. ROBINSON, D.D.S. 964

Potted Anthropology 965

Rediscovery of Jenner Portrait (*illus.*) 966

The Treatment of Burns.. 966

Murder on the Crumbles... 966

Anglo-Yugoslav Children's Hospital 967

Exercise Under Water 967

Witch's Milk 967

Malayan Medicine 968

The Technique of Massage 968

A Poison Story 968

Tobacco Therapy 968

The Adolescent Girl 968

Lotheissen's Operation ... 968

Psychological Factors in Rheumatism 968

Russian Work on Lysozyme 963

New Preparations: Nicamide—Carovit—Veguva 967

Medical Diary 962

Appointments 962

Vacancies 962

Births, Marriages, Deaths . 963

THE LONDON AND COUNTIES
MEDICAL PROTECTION SOCIETY, Ltd.

President: SIR CUTHBERT S. WALLACE, K.C.M.G., C.B., F.R.C.S.

Members receive UNLIMITED INDEMNITY (subject to the Articles of Association) against damages and costs in cases undertaken on their behalf and advice and assistance in all matters of professional difficulty.

The estate of a deceased member is similarly protected.

Assets exceed £75,000

Annual Subscription £1

Entrance Fee 10s.
(REMITTED TO RECENTLY QUALIFIED PRACTITIONERS)

Full particulars and application form from :—

Dr. R. W. DURAND, Secretary, VICTORY HOUSE, LEICESTER SQUARE, W.C.2. Gerrard 4553, 4814.

Just Published

INTRODUCTION TO
DISEASES OF THE CHEST

By

JAMES MAXWELL, M.D. (Lond.), F.R.C.P. (Lond.)

Assistant Physician and Demonstrator of Practical Medicine, St. Bartholomew's Hospital; Physician, Royal Chest Hospital; Consulting Physician, Royal National Sanatorium, Bournemouth

CONTENTS

SECTION I
THE HISTORY

CHAP.
1. THE SIX MAJOR SYMPTOMS
2. THE SIX MAJOR SYMPTOMS (*contd.*)
3. MINOR SYMPTOMS
4. THE AUXILIARY HISTORY

SECTION II
PHYSICAL EXAMINATION OF THE CHEST
5. INSPECTION
6. PALPATION
7. PERCUSSION
8. AUSCULTATION

SECTION III
SPECIAL INVESTIGATIONS
9. THE SPUTUM
10. BLOOD EXAMINATIONS—PLEURAL FLUID
11. RADIOLOGY OF THE CHEST
12. SPECIAL DIAGNOSTIC METHODS

SECTION IV
DISEASES OF THE RESPIRATORY TRACT
13. THE NOSE
14. THE MOUTH
15. THE LARYNX
16. THE TRACHEA AND BRONCHI

SECTION IV
(*continued*)
CHAP.
17. ASTHMA
18. BRONCHIECTASIS
19. TUMOURS OF THE BRONCHI
20. CHEST INJURIES — DISORDERS OF THE PULMONARY CIRCULATION
21. EMPHYSEMA
22. COLLAPSE OF THE LUNG
23. PNEUMONIA
24. BRONCHO-PNEUMONIA
25. PNEUMONITIS
26. LUNG ABSCESS
27. PULMONARY TUBERCULOSIS
28. PULMONARY TUBERCULOSIS (*contd.*)
29. TREATMENT OF PULMONARY TUBERCULOSIS
30. NON-TUBERCULOUS CHRONIC LUNG INFECTIONS
31. FIBROSIS OF THE LUNG
32. THE PLEURA
33. "PLEURISY"
34. EMPYEMA
35. TUMOURS OF THE PLEURA
36. THE MEDIASTINUM
37. THE DIAPHRAGM

INDEX

With 95 Illustrations

Demy 8vo, 328+xii Pages **12/6 net (postage 6d. extra)**

HODDER & STOUGHTON Medical Publications

Warwick Square, London, E.C.4

ADDRESSES AND ORIGINAL ARTICLES

THE APPROACH TO MEDICINE*

BY LORD HORDER, G.C.V.O., F.R.C.P.
CONSULTING PHYSICIAN TO ST. BARTHOLOMEW'S HOSPITAL, LONDON

MEDICINE, in all its more popular aspects and its more dramatic manifestations, is so much in the public eye these days—on the library lists, on the "flicks"—that, turning over the title in my mind, I realised that "The Approach to Medicine" is being undertaken by the general public, who not only think they approach, but are convinced that they have got right behind the scenes and have discovered the horror of our profession's "back-stage." They can, seemingly, tell us more about ourselves than we shall ever find out, unless it be by the help of still more ex-doctors and ex-medical-technicians of all types who discover—but why so late?—that their real vocation is not the practice of medicine but the revelation of what really does go on in the consulting-rooms (and areas) of Harley Street (though why Wimpole Street should escape I never know).

So I feel it is brave of me to talk to an audience who, since I am sure it keeps abreast of current affairs, probably knows so much more than I do about all these matters of revelations, of exposures, of debunking and of the doctor-as-he-actually-is by one-who-was-once-one.

But I am this evening talking of another sort of Medicine. I am talking of the Medicine that we practise and have neither the time nor the inclination to debunk, however profitably. My task is much more akin to that described in another "best seller"—I do not think anyone has had the inspiration to put "Pilgrim's Progress" on the films, but I may be wrong in this. I want to talk soberly and unsensationally, both of the "pilgrim" (the embryo doctor and the recently hatched doctor) and of his "progress" through a country which has changed a good deal of late, and changed rather rapidly. It behoves the pilgrim to know about these changes if he is to arrive safely at his destination.

TRADITIONS OF MEDICINE

Though there is much in the traditions of Medicine, and in the principles which guide us, which does not change, the human body and mind, in their interaction with the rest of the universe, whether for good or ill, are constantly changing. And if we add that subtle thing behaviour, whether we regard this as merely a complex expression of body and mind or as something added to these, it is clear to me that the function of the doctor is also constantly changing, and that therefore the preparation of men and women for this function should not be too rigid. In this, I think, our calling differs from that of the law, which, as a distinguished member of that profession has said, though it does so much to "quicken and invigorate the understanding," "is not apt . . . to open and to liberalize the mind . . . in the same proportion."

As for the third of the learned professions, the traditions (sometimes termed dogmas) upon which it is based are notoriously so fixed, that, *pace* certain ministers of religion who are beginning to consider the possible advantages to their flock of some knowledge of the human mind, the curriculum in divinity scarcely changes at all from generation to generation. Indeed, the man who sought to change it, except in non-essentials, would probably be suspect. The cleric "has pledged himself to certain beliefs which he cannot question if he is to remain in his profession," and this conformity of necessity controls his education within definitely prescribed limits.

There are four educational stages in the approach to Medicine. There is what we call "general education," there is the education a student gives himself, there are his preclinical studies, and there is his clinical and pathological work.

GENERAL EDUCATION

A good general education, then, first. The better—not the more—the better. Better handwriting, better spelling, better grammar, better reasoning. Of such great importance is the student's general education that I endorse the opinion expressed in the recent conference on the medical curriculum, that the study of medical subjects proper—i.e., anatomy and physiology—should not begin before the age of 18. But I also agree that the natural sciences should bulk more largely in, and should also extend through the whole period of, the school education. That I believe to be good, whether the pupil is going to be a doctor or not. But if he *is* going to be a doctor, then by the early study of the natural sciences he is killing three birds with one stone: he is learning important facts upon which his later studies can be grafted, he is developing a laboratory technique (for I assume that study of the natural sciences includes the use of the microscope and the test-tube), and, vastly more important than either of these, he is training his power of observation. If only schoolmasters realised the value of training their pupils to observe, encouraging them to use their eyes and ears and noses and hands, they would make a tremendous contribution to the development of their students' minds and add enormously to the fullness of life in after years.

SELF-EDUCATION

And now, the die being cast, the future doctor begins to educate himself. He has an enormous amount to do and very little time in which to do it. General reading, conditioning, as it must at this age, his general attitude to life, is vital. Yet let it not be too meticulously planned. Let his mind first of all browse lazily, with the unblunted eagerness of youth, over history—not forgetting that history is but the biography of great men—narrowing the field later, as interest gets more focused, to the story and history of scientific Medicine. So he links himself, without forging the link too closely, with the great past that Medicine boasts.

Then Science in all the aspects of it which overlap with his future work: Psychology, both "old" and "new"; Biology of course, all the time; Anthropology; Ethnology. This seems a "tall order" perhaps, for the adolescent who is, at the same time, hacking his way through a jungle of curriculum and examinations which would almost seem to be deliberately staged in order to destroy his initiative. But these subjects are not as formidable as they seem, especially in these days when the appropriate books are not (as they were in our day) hard to come by and grim to decipher.

* An address given to the Guthrie Society at the Westminster Hospital medical school on March 16, 1939.

Then there is the relief of the romance, but, time being short, why not the novels that have come to stay rather than attempt to keep pace with the weekly—or daily—reviewer? And poetry. Do you ask "why poetry"? The answer is not only that words have music so much as that the good poet appreciates the *value* of words more than anyone else. For the doctor the right use of words is vital.

Which brings me by an easy transition to *Logic*—not the disquisitions of the schoolmen but the principles of reasoning, which are so essential as a basis for the scientific mind. Asked, as I so frequently was—I wish I could still say am—to give a list of the best books to read in Medicine, my invaluable rule was to head it by Jevons' "Primer of Logic." I don't know, of course, how many of my inquirers took me seriously, but certainly I never answered any inquiry more seriously than I did when I gave this advice. Clear reasoning, with observation, to which I shall presently allude more fully—these are the twin pillars that support the whole superstructure of medical training, medical research, and medical practice. Accuracy in observation, forbearance and clarity in the use of words, a worship, almost, of the value of exact measurement, careful reasoning—these things characterise the scientific spirit, the spirit which has animated the giants of the world of thought and of action in medicine, the spirit of Harvey, of Hunter, of Jenner, of Pasteur.

Once this spirit is born in the prospective doctor he possesses a weapon of enormous service in his future progress. In a recent issue of *Nature*—that best of all periodicals for the student—Sir William Bragg complains of the increase in the number and scope of journals and magazines pertaining to research and acquired knowledge in science. This constitutes a serious problem even in the field of Medicine alone. The spirit of which I have spoken can be applied to this mass of material, and the few grains of wheat can be sifted unerringly from the large amount of chaff. It can be applied, and with drastic results, to the spate of talk with which the student is almost daily met. It is the touchstone by which he discovers the truth.

This process of self-education continues throughout the next stage of our pilgrim doctor's progress—continues, indeed, throughout the whole of it. But we must now picture him passing through his more intensive struggle with the secrets of Nature as revealed in the structure and functions of the human body. This is the stage during which he is more likely to get submerged than at any other. When Hippocrates said that "in order to cure the human body it is necessary to have a knowledge of the whole of things" he little knew what the modern doctor would be expected to know. If he had known he would surely have modified his aphorism.

This part of my address may sound rather critical, but I do not speak without some knowledge. Before I pass on to it, however, there are two matters upon which I must touch. One is the doctor's Religion, and the other is his relation to Politics.

RELIGION

What of the doctor's Religion? There is no totalitarianism of souls, and the religion of the health-man will be the result of a welding of his individual temperament, his upbringing, and the spirit of his time. The doctor looks out upon the whole field of human experience, from sheer mysticism to stark reality, and there need be nothing in any religious beliefs to which he may himself incline that should prevent him from being a good (or a bad) doctor. But there is one thing eternally incumbent upon him: he must sturdily resist all attempts by other men's religions to oppose the advance of science or to corner knowledge so as to prevent it from being available for the betterment of man's body, mind, and spirit.

Medicine has made many efforts in the past (and with considerable success) to control the external forces of Nature which, if uncontrolled, spell disease and premature death. There has lately been added an effort to effect biological control in respect of himself, and to this principle the doctor must needs subscribe. In doing so he finds himself in conflict with religious dogmas which, survivals of an attempt at a religious monopoly of science, still seek to stultify this forward step on man's behalf. But, short of this, the doctor will always recognise the right of every human being to his own religion and will realise how vital a factor such beliefs may be in the development of both mind and body. If he is ever intolerant it is with the extremist, whether it be the man who vows he has the only faith that can save the world or the man, no less fatuous, who vows he has none.

POLITICS

The relation of Medicine to Politics calls for a few comments. In the undergraduate stage of the doctor's training, his urge to take his place with the reformer and the pioneer in social, national, and international affairs should never, I think, be discouraged. Nor even that frequent swing to the "left," albeit at times rather violent.

It is customary, I know, for the elders amongst us to decry these youthful enthusiasms and compare them with the childish ailments through which the young must pass and from which they emerge, reputedly immune. I do not follow that custom. I hold that the capacity for enthusiasm is a priceless possession—this willingness to live and, indeed, to die, if needs be, for a cause—alas, how soon to fade. Immaturity is not a thing at which to gibe, and some of the scorn which it is apt to provoke is not seldom tinged with envy.

But the doctor—if he is to be the man I have in mind—must eschew the luxury of opinions that lie outside of his almost sacramental (and I dare use that word) profession. He may not enjoy the luxury of dying for any conviction save that appertaining to the good of his patient. It is part of his job to surrender to some extent his private feelings in order that he shall become the man whom all men can trust *outside* the strife—the life-man not the death-man, the peace-man and not the battle-man.

You will not all agree with this. Some of you will say that we must have old as well as young who will fight for ideals. Granted, and yet I say that if a man takes up this (perhaps the last remaining) profession that gives true power, he should realise that this power is great in proportion as he is impartial and detached. If, on consideration, he finds he does not possess the capacity to stand aloof from strife in order the better to heal, then he should strike off into one of the many side paths that the study of Medicine so amply provides and not remain in the fairway to obstruct the more serious players of the game.

This does not mean that the doctor's attitude towards Society is a negative one; far from it; there is much to do of a positive kind. But when he has seriously embarked upon his adult citizenship it is surely the cross benches that are the doctor's appropriate place. Sitting there he can continue to hold a watching brief for the common man, pre-

pared to back, with all the influence he possesses, whatever measures are proposed which he deems likely to safeguard his client's health and happiness, and equally prepared to oppose, with the same vigour, whatever may, in his judgment, prejudice these. Only in this way will he be regarded in the light which he surely desires—as an expert who should be consulted when matters of the Common Health are under discussion, and who should be feared on account of his power against legislation which, however useful to the opportunist in political affairs, is inimical to the public interest.

PRECLINICAL WORK

Of the prospective doctor's preclinical work I have said again and again that the motto should surely be *respice finem*.

I think we saw an unfortunate set-back when the medical schools decided to put pure anatomists, pure physiologists, and pure chemists at the head of their departments. Each professor has quite naturally wished to stake out his own claim and make it as large as possible. The position has been partly redeemed during recent years by a closer association of the heads of the departments with their clinical colleagues in the college committee.

In anatomy I have always thought that more time should be given to surface markings and to contours, and in place of elaborate and painstaking dissections of minute nerves and vessels I would introduce fuller details of the viscera, especially thoracic and abdominal. What is sometimes called "regional anatomy" is, as we know, of great importance, but surely much of what is taught much later in the operative surgery class might well be demonstrated in the anatomy room. And is it not time that the contribution made by X rays to our knowledge of anatomy, especially of the hollow viscera, should be used in the preclinical days?

But it is in the teaching of physiology especially that we still see too much cleavage from the later clinical work. The transition from the first to the second of these two parts of the student's work should be much less abrupt than it is. Indeed, it is not at present really a transition at all, it is almost a complete break. After all, what is disease except a state of morbid physiology? The patient's organs are the same in number, are placed in the same positions—or relatively so—as in health, and the functions by which a healthy man lives are the same through which he expresses his pathological state.

Yet that utter strangeness, that scared and helpless look, in a new-time clinical clerk, which too often remains with him for several weeks or months, what does it mean unless this—that there is in his mind the thought that he is about to embark upon an entirely new voyage, for which he is quite unprepared? To change the metaphor, his approach to the patient is as to a strange animal which he has never yet met, and whether the venture will be fraught with a peaceful or a bellicose issue he cannot say. And, in truth, all this is actually so. It *is* a strange animal that we face him with, physiologically, psychologically, and even, in great measure, anatomically. In relation to the patient's body he is not far removed from the ingenuous young woman who, seeing her navel one day in the mirror, immediately rang up her doctor and said, "Please come at once, I have discovered that I am deformed." Until we succeed in bridging this gulf we shall not effect a real improvement in our present system.

I was glad to see that the recent report of the conference concerning the medical studies recognises the wisdom of what I am saying. "It is believed" (it says) "that certain rearrangements could be made by concerted action of the teachers so that the course would be harmonious, consecutive and interesting." The words "and interesting" are refreshing! The report adds, with an odd naïvety, that "the relevancy (of the laboratory methods and careful dissections) to his subsequent study of the living body should not be allowed to escape his (the student's) notice."

Then with regard to the use of various instruments that are absolutely necessary for the purpose of a routine examination of the various parts of the body I long ago advocated that the technique of these should be mastered early—that is, in the physiological class-room. I referred to the stethoscope, the laryngoscope, the auroscope, the ophthalmoscope, and the blood-counting apparatus. The heart sounds are physiological and should be studied in the physiological department by auscultation. So also should the breath sounds. The larynx is a natural object in health, and the trick of seeing the vocal cords should be learnt as part of the physiological training; once learned it is not likely to be forgotten. It is the same with the retina: this is a normal structure, and how does one see it except with the ophthalmoscope? But when I ask a new clerk to look at an optic disk, he excuses himself on the ground that he is unfamiliar with the instrument. But it is quite likely that he knows a great deal about the theories of colour-blindness—or did when the fear of meeting the question at an examination was upon him, and before he had as yet forgotten them. And, in the same sense, if time presses, as we know it does, would it not be a good exchange to omit the study of the minute structure of the organ of Corti, and to learn how to see the drum of the ear? A great deal of my time in the wards was taken up in teaching first-time clerks this physiological routine. This should not be the best use that can be made of a physician who is supposed to be experienced in clinical methods and in the arts of diagnosis and treatment. I might continue by reference to urine examination and blood examination. The blood-cells are part of a normal tissue, and familiarity with the counting pipette should precede clinical instruction.

These examples of the ignorance of the normal at the time of entering the wards and the outpatient departments do not end with lack of acquaintance with simple instruments. The means by which the erect position is maintained and the mechanism of the normal human gait are generally quite unknown subjects. The significance of the knee-jerk and ankle-jerk, and even the method of eliciting them—normal things again—are nearly as foreign to most students at the end of their physiological training as is the use of the instruments to which I have just alluded. For the average weight of an adult male the student has to rely upon the general information paper at a Christmas party or the scale over the railway-station weighing-machine. This lack of preparedness for clinical instruction causes the student to advance a very little way indeed during his first clerkship.

It is the same in regard to bacteriology. Why should not the simpler principles and methods of bacteriological technique be included in the teaching of physiology? There is a flora in the normal alimentary tract, but it can only be properly demonstrated by bacteriological methods. The student knows all about the presence of a minute trace of potassium sulphocyanide in the saliva (an odd and comparatively valueless fact) and how to test for it. But he knows nothing at all, or scarcely anything, about the number and varieties of bacteria in this

same secretion, though this may have an importance in his future work which cannot be exaggerated.

If these and several other ad-hoc matters in physiology and anatomy are to be included and emphasised during the preclinical days, it is clear that some things must be shortened or excluded. The selection of these should be made by a joint committee of all teachers interested, *not merely by those who teach the subjects which require curtailment.* It should not then be a very difficult matter to come to some satisfactory conclusion.

GAPS IN THE CURRICULUM

Then there are some important subjects which, I think, should receive more attention, and which, again, should be introduced early, rather than late, in the curriculum. One of these has, even yet, received no attention at all. I refer to *psychology.* Years ago, when the curriculum was formulated, the fact that the patient was mind as well as body was conveniently forgotten. But everybody today recognises to what a large degree the mind bulks as a factor in disease and its treatment. Surely it is not stretching the scope of physiology over-much to teach something about the chief functions of the brain, which are feeling and thinking. The recent conference did, I was glad to notice, emphasise the importance of the psychological aspects of medicine.

I may not stay to speak about the importance of *genetics*, but I must make a reference to the neglect of any teaching on *dietetics.* The subject has grown steadily in importance and has received recognition by the establishment of chairs at certain universities. But very little, and that only of a local kind, is done to help the student to understand either the principles involved or their application. The stimulus given to the whole question of nutrition by the study of vitamins, by the introduction of insulin, by liver therapy, by the influence of the ketogenic and other diets, requires that something should be done to help the student to know at least as much as the public thinks it knows on this matter.

HABIT OF OBSERVATION

The progress continues, that is, for those who have not fallen by the way. The wards, the outpatient departments, and the post-mortem room replace the laboratories and the dissecting-room.

The doctor is a naturalist, having the human animal as his subject. Nature study is therefore of great value to the prospective medicine-man. To pursue any branch of it is helpful because it is good training of the power of observation. And observation is vital, so vital that the earlier the habit is cultivated the better.

I speak of Nature study, but for some odd reason human beings are not usually included in Nature study. The name more readily suggests wild flowers, trees, birds, and "common objects of the sea-shore." It is good to observe these things; it is better still to observe men and women and children and the things connected with them, for these are to be the future life of most doctors. If I am asked what, in connexion with human beings, should be observed, my reply is: anything, everything; the colour of their eyes and hair, the shape of their head, the clothes they wear and how they wear them, the way they walk and hold themselves, how they shake hands, say good morning and good-bye, and how they react to their fellows and the world in a hundred other things. Such observations demand an active, rather than a passive, attention, a breaking up of that state of useless reverie in which the untrained mind spends the greater part of its life. ("Sometimes I sits and thinks and sometimes I just sits.") This reverie can, with discipline and habit, be changed into an alertness, an awareness, that serves to supply the mind with food upon which it may ruminate. Someone with authority has said that we only use one-third of our brain for the ordinary affairs of life. I do not know how he arrived at this conclusion, but I should regard his estimate as being too liberal.

By the time the student enters the wards and outpatient rooms this habit of observation, if it has been cultivated, will have become extremely useful. He should aim at its becoming almost effortless, so that he cannot help observing. At first, faced with his patient, the beginner observes a lot of things that are very obvious and quite dissociated. How can it be otherwise? But after a time, and quite insidiously, things observed are not only more subtle, they tend to become systematised, purposeful, and synthetically useful. There arises the power of observing things that are not obvious, the power of looking *for* things, associated things which, taken together, make sense.

What I have said about the importance of observing by sight applies equally to the other senses—hearing, touch, smell. The character of a voice and of a cough, the rhythm of breathing, the texture of a skin, the resistance of a muscle, these and many more things register quickly and with meaning when this habit has been cultivated. And the various senses supplement each other.

These large and vitally important observations are more important than ever nowadays, when instruments of precision have become so numerous and so popular. Instruments of precision enable us to measure the degrees of the defects which our trained senses tell us may be present and in what directions we may most profitably employ them. When we have achieved facility in observation we do not have to wait until sights and sounds shatter our senses and hammer at the door of our consciousness, we are aware almost unconsciously. We have developed mental antennæ.

"CLINICAL INSTINCT"

When we have arrived at this stage, another thing happens. We not only make observations without knowing it, our observations take on a selective character; they group themselves in terms of affinity. We have now developed the faculty of distinguishing the essentials from the non-essentials. I believe that what is called the "clinical instinct" is not due to a "sixth sense," nor to "psychic" power, but to the fact that it is possible to make many observations of which the observer is largely unconscious and to effect a synthesis of observations possessing causative association, discarding the rest. Herein lies the nearest explanation of which I am capable of the mental process involved in diagnosis, that aim to which all observation should tend.

This facility in observing the healthy enables us to pick out the unhealthy, to note the unusual, to be attracted by deviations from the average. Recognition of the average should, as far as possible, precede clinical work, so that the student's attention is struck by any departure from it. I use the word "average" rather than "normal." Normality is a concept which involves a number of agreed theoretical considerations; the average is a summation of actual experiences. A deviation from the average may be psychological or it may be pathological; it must be assumed to be pathological until adequate reasons to the contrary are forthcoming. If pathological the deviation may be an isolated one and therefore

negligible, or it may be one of an associated series and therefore informative as regards the main inquiry. It should be assumed to have associations until proved otherwise.

Deviations from some averages are noticed readily —this man is tall, that man is short, this one is fat and that one is thin. Not so readily, however, do we notice departures from the average complexion —though there is one—nor from the average gait, nor mode of sitting on a chair, nor of lying in bed, nor of reaction to conversation—though there is an average, too, in all these things. As, indeed, there is in behaviour generally: how else do we recognise the bachelor, the spinster, and the only child? The value of recognising slight deviations from the average is seen in the early stages of a number of diseases which, but for this training, might otherwise go unsuspected. In this connexion I need only mention myxœdema, Graves's disease, chorea, nephritis, general paresis, and parkinsonism.

But people's faces must be observed for other things than their complexion—for the expression of pain, physical and mental, and whether pain is only recent or long standing; for happiness and unhappiness; and especially for anxiety and fear. What, in short, is the dominant emotional state? The value of this kind of observation is incalculable. It enables us to test the things that patients tell us; that "agonising" pain, those sleepless nights, those days and weeks of so little food that it is a wonder life is not extinct. Yes, but also "my mind is at ease" (when, quite clearly, it isn't). We must look at their faces; we must put them on the couch and on the scales, of course—*but we must look at their faces.*

After a while, having become sensitive to deviations from the average, being constantly tuned into them, it is frequently borne in upon us that the person with whom we are in contact does not conform to the usual, but for the moment we cannot say in what way. Paraphrasing the old tag we say to ourselves:—

> "You are not usual, Mr. L.,
> The reason why I cannot tell;
> But this I know, and know full well,
> You are not usual, Mr. L."

We must not leave things here. We must accept the challenge. Upon our readiness and capacity to pursue the matter to a conclusion turns, quite often, the solution of the problem. By this kind of mental discipline it is possible to develop a power that some folk call "uncanny." It isn't really uncanny; it merely means that we have trained our mind so that the onlooker does not see it working. The legerdemain of the prestidigitator is just as uncanny after years of practice with his hands. It means that we have become expert, that we possess a power which the layman has not got. If this were not so, the layman's ideas of health would be as sound as the doctor's; and, *pace* the views of many of our patients, they are not. The layman's "picture of health" may be an early case of Vaquez's disease, and the proud possessor of that "broad chest," which he displays in such military fashion, is revealing a committal sign of emphysema.

There is a class of "case" in the investigation of which this recognition of slight deviations from the usual is of special service. It is the class concerning which we hear it said so frequently that "there are no signs of organic disease." It is a good dictum to work upon, never to make a diagnosis upon negative findings. In many of these cases, in the class referred to, the habit of approach which enables us to detect these slight variants from the usual will often discover a series of positive points, each slender, yet each definite, on what is crudely called the "functional" side, which, together, carry conviction because they are positive.

SENSITIVITY

I hope that I have made it clear that mere industry, whether with books or with instrumental technique, useful though both of these are in the acquirement of knowledge, can never supply us with the kind of wisdom that medicine, of all pursuits, demands. Again, industry can never be a substitute for sensitivity. If it could, the exchange would be a very poor one. Some students try to "douse" their natural sensitivity or they are ashamed of it. Yet in the approach they have to make again and again to another human being it may be of tremendous service. Rather than seek to eliminate it, we should cultivate it. How many people will respond to our ***spiritual*** sensitivity we do not realise until we make close contact with them as doctor and patient, for many of our patients—and among these are some of those who need help most—cover their need with a spurious brusqueness which we must not fail to put aside, gently, of course, because they are just as much ashamed of their need as we may be of our ability to supply it.

EXAMINATIONS

I must not close without some reference to the student's *bête noir:* I mean, of course, his examinations. My views on these have not changed since I stated them a good many years ago, though I have had a great deal more experience both of examinees and of my fellow examiners.

I associate myself with those who say, quite tersely, that "examinations are, of themselves, a curse." The cramping effect they have upon the student's mind is all too obvious. And I have noticed that this paralysing effect is more marked, in the main, upon the good student, meaning by "good" the keen or the intelligent student, than upon the bad student, meaning by "bad" the lazy or the stupid student. If this were not so, I do not think the matter would be nearly so important as it is. One often sees a wild and reckless abandon about the lazy student in the examination room which suggests knowledge and facility and which may even, given a certain amount of luck, prove a useful asset. Whereas too often the good man is so other-than-himself through fear that it is not always easy to decide that he is not really stupid.

But if it were only under the stress of the actual examination that the quiet tenor of a man's thoughts is utterly disturbed it would not matter very greatly. What does matter is that during the greater part of his time of preparation for examination he is prevented from being either "wax to receive or marble to retain." This is on account of a constant dread lest what he is doing at any moment may be a waste of his precious time. When I am trying to familiarise him with some important physical sign, he is not only incapable of giving me his active attention, he even holds his stethoscope awkwardly while using it, and I find the reason is that he is supporting a "Synopsis of Medicine" under his arm. His "Synopsis of Medicine" is his protection against any heresy with which I may be threatening to traduce him.

This skeleton of the examination sits for ever at his feast of knowledge. It takes away both his appetite and his digestion. The viands are gobbled hurriedly, but his system is not nourished. His mind is a mere machine for the reception of facts

which it does not assimilate, whereas it might be a vital organ adapted for the pursuit of wisdom.

What can be done about all this? I think several things can be done. One is that examinations, if we must have them—and it seems that we must—should be got over in all subjects except the finals as soon as the student is able to pass them. In the case of many diligent students this would free them for their clinical and pathological work at an earlier period in their curriculum. I favour greater freedom at the examination itself, such as a choice of questions and, where there is already a choice, a still greater choice, and more time to answer the questions if the candidate so desires. But if only we could publicise the fact that the exhibition by a candidate of a little clearness in thinking, of soundness in methods, and of a knowledge of essentials rather than oddities and trivialities will secure a pass, whereas he may memorise his blessed synopsis from cover to cover and yet be referred, we should do a great deal to kill this bogy.

It has fallen to my lot—quite often I am glad to say—to welcome back to the wards a pupil who had just completed his finals. But, do you know, it was often not immediately apparent who he was; and I have a good memory for faces. True, he had become a little more careful in his clothes and with his hair . . . but that was not the greatest change; the great transformation was physiognomical. His "anxiety neurosis" had been cured. It was now the face of a rational being. I saw that the channels of his senses were open—he observed. The channels of his mind were free—he thought. The pilgrim had finished his progress, the approach to medicine had been completed. What says the wise man?

> "The wisdom of a learned man cometh by opportunity of leisure:
> And he that hath little business shall become wise.
> He shall be filled with the spirit of understanding.
> He shall pour forth wise sentences,
> He himself understandeth counsel and knowledge,
> And on their secrets shall he meditate.
> Many shall command his understanding,
> And never shall his name be blotted out."

SURGICAL ANATOMY OF THE SUBTENTORIAL ANGLE

WITH SPECIAL REFERENCE TO THE ACOUSTIC AND TRIGEMINAL NERVES

By E. P. Stibbe, F.R.C.S.

PROFESSOR OF ANATOMY IN THE UNIVERSITY OF LONDON AT KING'S COLLEGE

(*Concluded from p. 862*)

Surgery of the Sensory Root of the Fifth Nerve

The surgical treatment of idiopathic trigeminal neuralgia has settled down in this country mainly to extradural resection of part of the sensory root of the fifth nerve by a parietal approach.

The first operation, performed by Victor Horsley in 1891, was intradural, and the patient died, though post-mortem examination showed that there was no gross brain lesion. In 1895 Tiffany successfully operated intradurally by the parietal route and, in reporting his case, emphasised the following points:—

(1) By allowing cerebrospinal fluid to escape, the necessary elevation of the temporal lobe was more expeditiously carried out and with less damage.

(2) Venous oozing, which is so troublesome when the periosteum is being detached, is done away with.

(3) The middle meningeal artery, being extradural, is undisturbed, whereas in the extradural approach the exposure and ligature or plugging of this artery presents a pretty problem.

In this country no great effort seems to have been made to follow up the intradural method. Frazier, in America, introduced the extradural method in 1901, and thereafter British surgery has been devoted to the perfection of a technique for the parietal extradural method. Some British surgeons practise intradural resection through the posterior fossa. The position in this country, however, may be summarised by saying that resection of a part of the sensory root (replacing resection of a part of the gasserian ganglion) by the parietal route and extradurally has become a well-established set operation. It is within the scope of the competent general surgeon and is especially safe and sure of results in the hands of surgical neurologists. In the hands of the latter mortality is very low, perhaps less than 1 per cent., results are absolutely good, and recurrences, though not unknown, are uncommon, even after many years.

Frazier, in America, reported more than 100 consecutive cases by this method with no mortality and no recurrences.

In 1925 Dandy published a preliminary report of an intradural approach to the sensory root of the fifth nerve through the posterior fossa. His immediate purpose seems to have been to endeavour, if it were possible, to design an easier and less formidable procedure and to find a method for avoiding anæsthesia of the cornea with its sequelæ of ulceration or interstitial keratitis. In connexion with the latter problem, it is to be noted that Frazier divided only the outer two-thirds of the nerve immediately behind the gasserian ganglion, thus leaving undamaged what purported to be the ophthalmic fibres, so that the question of corneal anæsthesia would not arise.

Dandy seems to have been puzzled that it should be possble for division of two-thirds of the nerve to lead to an entire cessation of pain and yet (as implied, if not explicitly stated or demonstrated, by Frazier) not cause a loss of ordinary tactile sensation. It is unfortunate that this side of the question is not exhaustively dealt with by Frazier, in the sense that he does not publish complete postoperative sensory examinations. This part of the problem, however, becomes less puzzling if one remembers that in the vast majority, if not all, of the cases true idiopathic trigeminal neuralgia begins in the maxillary or mandibular divisions of the nerve, and that the extension of the manifestations is by some form of "radiation"; so that it is fair to say that Dandy misunderstood Frazier, to the extent that he applies Frazier's conceptions of what happens to a part of the nerve as though Frazier were dividing the whole nerve. Dandy states that if Frazier's distal operation is successful, then a section by Dandy's method close to the pons should be at least equally successful; but "there is no proof that the position and distribution of the pain-fibres may not have shifted in the distances intervening between the point of retro-gasserian section and that near the pons."

Dandy goes on to postulate—though he does not pretend to have proved—a possible segregation of the fibres during their course from the gasserian ganglion to the pons, in such a way that in the proximal half of the nerve the pain-fibres passing to the spinal root already lie in the posterior or outer part of the nerve, whereas the ordinary touch fibres passing to the principal nucleus lie in the anterior or medial part of the nerve. Before discussing this hypothesis

we may refer to certain facts about the sensory root of the fifth nerve that are well established.

PHYSIOLOGY OF THE SENSORY ROOT

(1) It is certain that the principal nucleus is a relay station on the path of epicritic or discriminative fibres, and that the descending or spinal root, relayed in the spinal nucleus, carries pain and thermal impulses. The best evidence for this is the dissociation of symptoms into loss of touch-sensation and loss of pain-sensation seen as the result of lesions involving one only of these two nuclei. Stopford summarises the evidence and illustrates the paths of the fibres in his book, and in papers on the function of the spinal nucleus and on the posterior inferior cerebellar arteries. Many other writers—e.g., Gillis (1914) and Gerard (1923)—report individual cases of lesions of the spinal nucleus producing dissociation of sensation (the usual lesion is thrombosis of the posterior inferior cerebellar artery); Stopford has collected these and added them to his own, and he concludes that the evidence is ample to prove the protopathic function of the spinal fibres and nucleus.

(2) There is no uniformity of opinion as to just what the fibres of sensory root of fifth nerve are like or as to the details of their fate before or after their entry into the pons. In textbooks a general description is given of the fibres of the sensory root as "dividing into two branches, of which the upper go to the principal nucleus, while the lower form the descending or spinal root." This would imply that protopathic and discriminative impulses are carried by one fibre, and that the sensations take separate paths only when they reach collaterals of the fibre; this conception presents great difficulties. Fortunately Gudden (1892) describes undivided fibres to a considerable number among the divided fibres (about the histological existence of which there is no doubt). So we may suppose that some fibres actually go to both nuclei, and that the difference lies perhaps in threshold of response to stimulation; but that others go only to one nucleus or the other.

Mention should be made of Ranson's (1931) argument, on physiological grounds, that pain-fibres should be unmyelinated. This may be dismissed for our purposes, since (as shown for example by Kock in 1916) the number of non-medullated fibres in the human fifth nerve is very small.

We may take it then that, although the anatomical observations are not very precise or convincing, the fibres within the pons go to one or other of the two nuclei under discussion.

(3) Kappers (1920), in his illuminating work on the comparative anatomy of the nervous system of vertebrates, works out the functions of the different central parts of the fifth nerve. Thus the spinal root and nucleus are the oldest part of the nerve phylogenetically and, in animals below the reptilia, subserve the reflexes of the skin of the head. Only in certain reptiles does the anterior end of the spinal nucleus enlarge and begin to become an entity (principal nucleus) and thus the newer epicritic or discriminatory paths begin. So we may picture the principal nucleus and trigeminal fillet as a contribution to the development of the neopallial system, and the spinal nucleus as the original archepallial non-discriminative system.

For these reasons we may take as a working basis the conception that somewhere between the gasserian ganglion and the actual nuclei the sensory fibres of the fifth nerve undergo a rearrangement and a segregation into discriminatory touch fibres (principal nucleus) and protopathic fibres (spinal nucleus).

THE SURGICAL PROBLEM

If Dandy's postulate is correct, that this rearrangement takes place in the sensory root before the pons is entered, section of the posterior or outer half of the nerve close to the pons should establish complete analgesia without anæsthesia. (Though the victim of the tic douloureux will go through much to get relief of his pain, he does not specially relish the numbness which is the price he has to pay.) This posterior partial resection Dandy practises and reports good results. Moreover, he claims the following other advantages for this manner of operation:

(1) Much easier access, a shorter distance to go, and much more room in which to work.
(2) A relatively bloodless approach.
(3) After cerebrospinal fluid has been allowed to escape, the cerebellum is readily displaced with no traumatism.
(4) The operation can be accomplished with extraordinary speed.

On these surgical aspects of the question I express no opinion so far as the human subject is concerned. In monkeys access to the fifth nerve through the posterior fossa is relatively bloodless, but in the small animal one is working at considerable depth in a disconcertingly narrow space. More important, however, than this consideration is the fact already referred to, that retraction of the cerebellum causes so great a torsion of the brain-stem as to produce intensive areas of degeneration. This objection may be taken as applying only to small animals, and even with these, so far as the medulla goes, this has not been effected by torsion; so that the spinal nucleus and root can be satisfactorily examined but not the principal and ascending fibres. It has not proved possible in these animals to cut the nerve near the pons by the parietal root; the petrous portion of the temporal bone ascends very abruptly towards the middle line, making it almost impossible to see or work in the region of the tentorial opening.

The anatomical aspects of the question, which are the proper concern of this paper, are dealt with as follows:

(1) Endeavours to demonstrate by dissection the course of the fibres of the sensory root.
(2) Clinical observations which assist in elucidating the anatomical problem.
(3) Experimental comparisons of the results of the two different types of operation—namely, the partial distal resection and the partial proximal resections.

GROSS ANATOMY OF THE NERVE

Frazier states definitely that the division of the nerve into three parts—ophthalmic, maxillary, and mandibular—is topographically represented in the ganglion and at least in the distal part of the sensory root. Whitehead (1925) follows this up by demonstrating that in embryos the ganglion consists of three distinct parts, each associated with its own topographic division of the nerve, and goes on to show that there is "no tendency for the fibres of the sensory root to intermingle." Woollard and Carmichael (1932) state more guardedly that "a study of the ganglion and the central root by anatomical methods has led to the conclusion that there is no complete segregation of fibres in the central root corresponding to epicritic and protopathic functions."

Reports have also been made on the fifth nerve of animals other than primates. I am not prepared to accept these as having definite bearings on the practical problem of the disposition of the fibres in man.

DISSECTIONS

Dissections of the fifth nerve in man have proved disappointingly inconclusive, possibly owing to the failure so far to devise a satisfactory technique. It is certain that the fibres of the sensory root inter-

mingle, crossing and recrossing; that fasciculi, jutting off, branch here and there, joining up with one another again and splitting. The superficial attachment of the nerve to the pons is excessively fragile in virtue of the fact that immediately upon entering the pons the fibres break away to such an extent that so far no single convincing and complete dissection has been produced. On the other hand, these difficulties should not be insurmountable, and the imperfect dissections (fig. 6) strongly suggest that the nerve close to the pons is segregated into two parts: outer or posterior fibres which go entirely to the spinal root; and inner or anterior fibres, some of which go to the spinal root but most to the principal nucleus.

FIG. 6—Analysis by dissection of sensory root of trigeminal nerve. A, mesencephalic fibres; B, spinal fibres; C, principal nucleus fibres. Pons has been partly cut away and is looked at from above and behind.

It is proposed to follow up this side of the work by devising some method for fixing in situ before dissection. The histological structure of the nerve is also being studied and the results are being reported elsewhere: they should, when complete, offer useful collateral evidence.

Clinical evidence strongly suggests that the pain-fibres of the fifth nerve dissociate from the tactile fibres, and moreover that the pain-fibres are rather in the posterior part of the nerve. Careful examination of many lesions, mostly tumours indirectly involving the fifth nerve, gave almost uniform results—namely, that there is a sense of numbness, definitely a loss of sensibility to pain, a pinprick being usually well orientated but not giving a sensation of pain, whereas moderate degrees of heat and cold are variable, but touch to cotton-wool is definitely appreciated and orientated. The following case is typical of many:

Tumour of cerebellopontine angle (proved post mortem) growing into fifth nerve posterosuperiorly.

1929: right cornea insensitive; pinprick felt as touch in supra-orbital region only. 1930: add subjective numbness of right forehead. 1931: analgesia of right forehead and cheek. 1933: analgesia, but only slight indefinite anæsthesia, of whole right side of face.

Note the definite progression *down* the face of analgesia as the nerve is invaded from behind.

In a similar case, with the same progression of symptoms, the patient was rapidly relieved by decompression only, the subtentorial tumour being deemed irremovable.

It may be said that in most cases in which acoustic-nerve tumours have secondarily stretched or pressed on the fifth nerve from behind the sign of fifth-nerve involvement is loss of *pain*-sensation. Moreover this commonly disappears in the order which has been postulated by Stopford for the pain-fibres—namely, that the most posterior are the ophthalmic, then the maxillary, and the most anterior the mandibular. This order is well known for the spinal nucleus, and these tumours strongly suggest the same order for the fibres in the sensory root. It has already been noted too that in some cases in which the tumour has been deemed irremovable a decompression operation has almost at once cleared up the fifth-nerve symptoms—hence we must assume that the nerve was merely pressed on, and that from behind and below.

EXPERIMENTAL WORK ON MONKEYS

As in the other experiments, the animals were kept some little time before operation and became accustomed to their surroundings. It was hoped in this way that some tests of the effect of the operations on sensation might be made. The anæsthetic used throughout has been induction with chloroform and ether followed by intraperitoneal injection of dial as stated above. Dial given by this method acts in about ten minutes, and thereafter no further general anæsthetic was required, except in one case in the series. The anæsthetic gives complete relaxation and lasts for several hours. The average dose given to an adult macaque was 1·5 c.cm.

Two series of operations were carried out embodying, on the one hand, the principles of Frazier's parietal method and, on the other hand, those of Dandy's transcerebellar method.

(1) *Parietal.*—Two types of incision were used: the old curved incision turning down the temporal muscle; and a nearly vertical incision in the direction of the temporal fibres, splitting the muscle and stripping it and the periosteum forwards and backwards.

With adequate retraction the latter method gives a quite sufficiently good exposure and has the advantage of greater simplicity and less traumatism and bleeding. Entry was made into the skull in all cases with a heavy brace and bit with a coarse burr; I have commented on this instrument above.

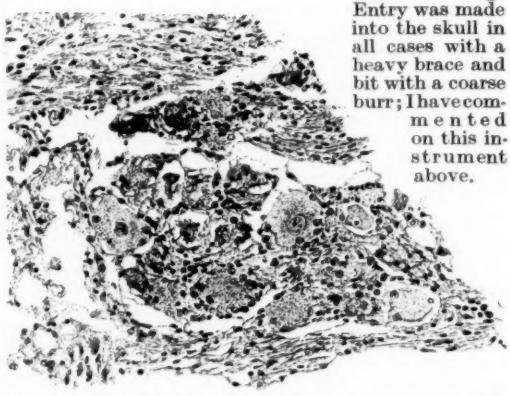


FIG. 7—Section of proximal part of sensory root of trigeminal nerve showing numbers of large sensory cells. Macaque. (Hæmatoxylin and eosin × 180.)

In enlarging the opening by the parietal method the best way to get plenty of room (in monkeys at any rate) is to work well forwards, so that the entire anterior part of the temporal lobe can be raised bodily instead of being merely compressed against overhanging bone. Another reason for working well forwards is that the dura on the great wing of the sphenoid is readily detachable, whereas more posteriorly the dura is very firmly attached to the temporal bone. The only other point worthy of notice in the operations was that, if one endeavoured to get beyond the upper edge of the temporal bone into the posterior fossa, the superior petrosal sinus bled so

freely as to spoil the operation. This sinus is probably much less of a barrier in human patients, because the real difficulty in the monkey is the very abrupt upward slope of the anterior surface of the petrous portion of the temporal.

In the cases done by the parietal route, the posterior or outer, approximately a third of the nerve was sectioned immediately proximal to the gasserian ganglion.

Clinically, there was no anæsthesia of the cornea. Histologically, there was either no degeneration at all in either the spinal or mesencephalic root of the nerve, or very slight degeneration. This anticlimax proved a serious set-back, until the explanation was found by carefully examining the cut nerves in serial section. It was found (fig. 7) that the sensory root contained considerable numbers of bipolar nerve-cells at various points in its course; generally these were near the pons, often quite close to the pons. Thus, section of the nerve peripheral to these cells will not cause any degeneration proximal to the cells in so far as the processes of those cells are concerned—and need not cause any central degeneration at all. These cells are also found in man. They were described in October, 1935, by Peters just at the same time that I first observed them. This group of cells proximal to the gasserian ganglion is of great significance. The conception that section of the sensory root of the fifth nerve ought permanently to throw it out of action is based ultimately on the view that the sensory fibres are for practical purposes a part of the central nervous system and so cannot regenerate. Actually, at least some of the fibres are cut distal to their nerve-cells and therefore are liable to regenerate. This accounts for the recurrences of trigeminal neuralgia after the operation. Admittedly these recurrences are very few and only after a long interval; but we have, in the presence of these cells, a warning that recurrences are possible when the peripheral operation has been performed.

(2) *Dandy's transcerebellar route.*—The special comments to be made on the operation from my point of view are:

(*a*) The objection has been made that the detaching of the great mass of muscles from the occipital bone is a formidable procedure. This is admitted, although in the monkey it gave little or no trouble, nor was the hæmorrhage excessive.

(*b*) Great care must be taken in enlarging the bone opening upwards because of the transverse sinus.

(*c*) Retraction of the cerebellum is materially assisted by what Dandy calls opening the cisterna magna, which I think must really be breaking down the trabeculæ referred to in my description of the anatomy of the region. Anyway, if one pushes a blunt instrument medially towards the falx cerebelli, some loose tissue is broken down, there is a gush of cerebrospinal fluid, and the cerebellum immediately becomes more mobile.

With this method there were two successful cases. Marchi preparations (11 and 13 days after operation) show conspicuous degeneration of the spinal root of the fifth nerve of the same side. Comparison of this with normal slides justifies the belief that the whole of the spinal root is degenerated—i.e., that the outer half (or a little less) of the sensory root close to the pons consists of fibres going to the spinal root and nucleus and comprises the whole of the spinal root.

Summary

(1) This paper deals with the clinical anatomy of the eighth (acoustic) and fifth (trigeminal) cranial nerves.

(2) The subtentorial angle (which contains these nerves) is defined and the anatomy of its boundaries and contents discussed.

(3) The relations of the eighth nerve are such that cardiovascular disease might directly irritate the nerve, causing vertigo and tinnitus.

(4) It is possible in man and in monkeys to resect the auditory part of the eighth nerve apart from the vestibular part; the operation in monkeys is described.

(5) A brief history is given of the parietal extradural and the transcerebellar intradural methods of approach to the trigeminal nerve.

(6) There is anatomical reason to anticipate possible recurrence of symptoms after post-gasserian resection of the fifth nerve; Dandy's proximal partial resection destroys the spinal-root (protopathic) fibres.

REFERENCES

Biehl, K. (1900) *S.B. Akad. Wiss. Wien.* **109**, 324.
Dandy, W. E. (1929) *Arch. Surg., Chicago*, **18**, 687.
Dench, E. B. (1912) *Med. J. St Louis*, **19**, 29.
Frazier, C. H. (1913) *J. Amer. med. Ass.* **61**, 327.
Van Gehuchten, A. (1895) *Mém. Acad. R. Belg.* **29**, 417.
Gerard, Marg. W. (1923) *Arch. Neurol. Psychiat., Chicago*, **9**, 306.
Gillis, A. C. (1914) *J. Amer. med. Ass.* **63**, 1550.
Gudden, H. (1892) *Allg. Z. Psychiat.* **48**, 16.
Horsley, V. (1891) *Brit. med. J.* **2**, 1127.
Kappers, A. (1920) Die vergleichende Anatomie des Nervensystems, Haarlem.
Kock, S. L. (1916) *J. comp. Neurol.* **26**, 541.
Maybaum, J. L. (1918) *N.Y. med. J.* **107**, 780.
Peters, G. A. (1935) *J. comp. Neurol.* **62**, 349.
Potts, B. H. (1908) *J. Amer. med. Ass.* **49**, 625.
Ranson, S. W. (1931) *Proc. Soc. exp. Biol., N.Y.* **28**, 381.
Sachs, E., and Alvis, B. Y. (1921) *Arch. Psychiat. Neurol.* **6**, 119.
Stopford, J. S. B. (1930) Sensation and the Sensory Pathway, London.
Thomas, A. (1898) *C.R. Soc. Biol. Paris*, **10**, 594.
Tiffany, L. Mc. (1895) *Ann. Surg.* **21**, 510.
Wharry, H. M. (1924) *Lancet*, **1**, 893.
Whitehead, E. (1925) *Brain*, **48**, 458.
Woollard, H. H., and Carmichael, E. A. (1932) *J. Anat.* (Proc.), **67**, 204.

M. & B. 693 IN CEREBROSPINAL FEVER

A REVIEW OF 143 CASES TREATED UNDER FIELD CONDITIONS *

BY R. B. USHER SOMERS, M.B. Birm., D.T.M. & H.
MEDICAL INSPECTOR, SUDAN MEDICAL SERVICE

DURING the five years 1934–38 inclusive 21,599 cases of cerebrospinal fever were reported in the Anglo-Egyptian Sudan. Of those 14,816 were fatal, giving a case-mortality of 68 per cent. In the Rumbek district of Equatoria province there was an outbreak at the beginning of this year. Within less than a month from its start 260 cases were reported, with 83 deaths. In the first three days, before medical assistance was available, there were 41 cases with 33 deaths—a fatality-rate of 80 per cent.

I have been personally responsible for the care of 180 patients, all of whom were admitted to hastily prepared field quarantines. All treatments had to be carried out under adverse conditions in dusty grass shelters with insufficient and unskilled (though willing) native staff, and patients received the crudest of nursing and food. One relation of each patient was allowed in to look after and feed the sick. Tinned milk for special cases was the only supplement to ordinary native diet. The present paper is based on 143 cases treated solely with M. & B. 693 (2-sulphanilyl-aminopyridine) and these are divided into

* This paper and the one following have been abbreviated for publication and proofs have not been submitted to the authors.

the following groups according to the method of administration of the drug.

In *group I* a watery suspension of M. & B. 693 was given intrathecally and intramuscularly. The moribund condition of most patients precluded oral administration. At the suggestion of Dr. Joseph Bryant a finely crushed tablet (0·5 g.) was suspended in 40 c.cm. of distilled water. Varying amounts of this suspension were given intrathecally, and the total dosage was adjusted by the amounts given intramuscularly. The intrathecal dosage was regulated by the appearance and amount of the cerebrospinal fluid (C.S.F.) withdrawn, and the total dosage by the age and condition of the patient; but in no case did one treatment exceed 50 c.cm. or the total dosage approximately 1·2 g. One treatment consisted of one intrathecal and one intramuscular injection given at the same time. Treatments were given on consecutive days.

The immediate results were gratifying. Many patients, moribund at the time of the first injection, were sitting up and feeling comfortable within twelve hours, and the C.S.F. had begun to clear. Of the 18 patients thus treated 7 died: 6 died within twenty-four hours of the first injection, and 1, a male aged 35, died (after an apparent recovery) on the sixth day after injection. Of the 11 patients who recovered, 3 received one treatment only, and the other 8 two treatments.

In *group II* a watery suspension of M. & B. 693 was given intrathecally and intraperitoneally. The suspension used in group I tended to block the syringe needles, and a solution of half the strength was made—i.e., 0·5 g. in 80 c.cm. To give an adequate total dosage too large volumes were required for the intramuscular route; so the intraperitoneal route was used instead. The intrathecal dose was 3–10 c.cm. and the intraperitoneal dose 25–80 c.cm. The total never exceeded 1·2 g.

Of the 56 patients thus treated 4 died. Two brothers, one aged 3 months and the other 4 years, were moribund when first seen and died within twelve hours of injection. In the two other fatal cases the patients had one treatment each, made apparent recoveries, and died suddenly, one on the fourth and the other on the fifth day after injection. Of the patients who recovered 24 had one, 26 two, and 2 three treatments each.

In *group III* a watery suspension of M. & B. 693 was given intrathecally and an oily suspension (0·5 g. in 2·5 c.cm.) intramuscularly. The intrathecal dosage was as in group I and the intramuscular dosage 1–5 c.cm. The total dosage never exceeded 3 g., the average being under 1 g.

Of the 66 patients thus treated 3 died. A woman, aged 30, died a few hours after admission and one injection. Her C.S.F. was still clear, and there was much rigidity. A male, aged 8 months, died within twenty-four hours after one treatment, and a female, aged 4 years, died on the fifth day after three treatments. She also suffered from severe hookworm infection. Of the 63 patients who recovered 25 had one treatment, 29 two, 8 three, and 1 four. The ages varied from 1 month to 45 years.

Group IV consisted of 3 very mild cases given intrathecal injections only. All made complete recoveries. The total doses given were 0·3 g., 0·9 g., and 1·2 g.

The accompanying table summarises these results. It shows that in 143 consecutive cases of cerebrospinal fever given M. & B. 693 the case-mortality was 10 per cent., while in group III, in which larger doses were used, it was less than 5 per cent. The average length of active treatment was under two days, and only on a few occasions were more than two injection treatments necessary.

Dosage.—Throughout the treatment the condition of the patient and that of the C.S.F. were the criteria for the amounts of M. & B. 693 injected, and the youngest patients, since they were usually the most seriously ill, received proportionately the largest doses. The total amounts of drug used are very small when compared with the oral dosage used in the treatment of pneumonia; 1·2 g. was the maximum when the watery suspension alone was used, and 3 g. when it was combined with the oily suspension. The small total dosage used is important in field and epidemic conditions. In group I it appears that the dosage was too small. An initial dose of approximately 1 g. is suggested. Infants tolerated injections of 0·25 g. (40 c.cm.) intraperitoneally and 0·5 g. intramuscularly. Saline suspensions replaced watery ones and gave less pain.

RESULTS OF TREATMENT OF CEREBROSPINAL FEVER WITH M. & B. 693

—	Cases	Deaths	Mortality	Average number of treatments
Group I ..	18	7	39%	2
„ II ..	56	4	7%	1·6
„ III ..	66	3	4·6%	1·8
„ IV ..	3	—	—	1
Total ..	143	14	10·2%	1·7

No toxic symptoms followed the exhibition of M. & B. 693. Herpes labialis, a not uncommon feature of cerebrospinal fever, seemed to be met with oftener in those receiving large injections. Intraperitoneal injections caused a more rapid general improvement than did intramuscular injections. When possible, lumbar puncture was performed after completion of treatment. In most cases the C.S.F. became clear before the temperature fell to normal. Arthritis of the large joints and stiffness of the neck usually persisted for some days after the general condition had improved, but they caused little inconvenience to the patients.

SUMMARY

The usual case-mortality of cerebrospinal fever in the Sudan is 68–80 per cent. In 143 consecutive cases treated with small doses of M. & B. 693 the case-mortality was 10 per cent.

My thanks are due to the Director of the Sudan Medical Service for permission to publish this paper; to Dr. Ali Ibrahim, who relieved me of routine work; and to Dr. A. Cruickshank, senior medical inspector, Equatoria, for his valuable advice and criticism.

POPULATION OF THE SOVIET UNION.—Preliminary figures for the census taken in Soviet Russia last January give the U.S.S.R. a population of 170,126,000. The increase since 1926 is 23,100,000, which is approximately equal to the population of Spain. In Moscow, it is stated, the birth-rate was 69 per cent. higher in 1938 than in 1936; the death-rate for the entire country has dropped by over 40 per cent. compared with 1913. The census shows that the total number of industrial workers employed in the U.S.S.R. rose from 11,600,000 in 1928 to 27,800,000 in 1938. The urban population has more than doubled since 1926.

CHEMOTHERAPY OF CEREBROSPINAL FEVER IN THE FIELD

BY J. BRYANT, M.D. Edin., F.R.C.P.E., D.T.M. & H.
SENIOR MEDICAL INSPECTOR, SUDAN MEDICAL SERVICE; AND

H. D. FAIRMAN, M.B. Lond.
MEDICAL OFFICER, SUDAN MEDICAL SERVICE

FOR the last three years cerebrospinal meningitis has been present in the Dinka districts of the Equatoria province of the Sudan. In 1937 and 1938 there were localised outbreaks with a very high case-mortality, and at the beginning of 1939 there was a severe outbreak in Tonj district. The Dinkas, a Nilotic people, cultivate the higher ground in the wet weather and tend their herds in the grasslands during the dry season. They are scattered in family units, making the isolation of a community most difficult and increasing the difficulties of treatment and control of any widespread epidemic.

The mortality due to cerebrospinal fever in the province is usually 65–70 per cent. and often 90 per cent. The fulminating form of the disease is common, killing in twelve hours or less. Quarantine measures are unpopular, and hitherto treatment has met with little success. Repeated lumbar puncture is usually ineffective, and serum deteriorates rapidly in the high temperatures of the Sudan. The conditions under which treatment has to be carried out are extremely primitive: patients are seen and treated under trees and in grass quarantine shelters in bush country, often far from the roads. We think that few in European practice would even venture to perform so simple an operation as lumbar puncture under such conditions, and we feel that apologies are hardly needed for the omission of microscopical examinations and temperature records. The methods used were in the nature of desperate remedies and may perhaps be new.

CONTROL OF OUTBREAK

In the past it has been possible to do little to limit an epidemic except to police roads and river crossings and shut merchants' shops, which are nearly always foci of infection because of the crowds that collect and gossip on the verandahs. In view of the success that has followed treatment with the sulphonamide group of drugs, however, we have attempted to bring every case to a centre where such treatment can be given. These centres are in a situation convenient to several subgroups of a tribe and are easily reached on foot or by car. Distances must be reasonable, say twenty miles at the outside from the furthest members of an infected community, for adult patients have to be carried in, and the Dinka male is very tall and heavy. The preponderance of women over men in this series may be partly due to the fact that many men died on the road to the treatment centre. Once the news had spread of a miraculous cure for cerebrospinal meningitis, we received few cases of over two days' duration, for relations and friends started to carry in the sick at the first onset of symptoms. We believe that, with the coöperation of the chiefs, we can now locate every case of the disease in a given district. This information is particularly valuable, for we have every reason to believe that the outbreak is still spreading. Chiefs have also started to enforce the prohibition of dances, the meeting of chiefs' courts, and all tribal functions and gatherings.

TRIBAL SUSCEPTIBILITIES

Tribal groups in the southern Sudan react very differently to various drugs and diseases. Bismuth for yaws can be administered in full doses to Nilotics (Dinka, Shilluk, and Nuer), whereas caution must be exercised with the same drugs in forest-dwellers (Azande, Bongo, and others) or a dangerous stomatitis results. Chloroform is ill tolerated by Nilotics, well by the Azande. Bone lesions in yaws are common in Nilotics, uncommon in forest-dwellers. Hookworm causes a profound and intractable anæmia in Dinkas, whereas the Azande are not affected to the same extent. It does not follow, therefore, that the results of treatment recorded here would have their counterpart in Europe or even in other parts of Africa. We are concerned here solely with the Dinkas.

DIAGNOSIS AND CLINICAL FEATURES

In all cases the diagnosis of cerebrospinal fever was made for us by the natives, and in one instance only were they wrong, the patient having a very high intrathecal pressure due to some other cause.

Clinically the disease is too well known to need description beyond a few outstanding features of this epidemic. Respiratory symptoms were present in all cases, usually simulating bronchopneumonia. Coughs and colds were noticeable among the population as a whole. (The nights were cold; many of the days were overcast and oppressively hot; and in the worst centres there was a ceaseless dry strong north wind with a dust storm blowing throughout the day.) Nose-bleeding was common both among the sick and the healthy, but no stress is laid on this symptom, for it is impossible to say whether it was due to the excessively dry atmosphere or to disease. Swellings of the joints, especially the knees and wrists, were common. It has been noticed in previous outbreaks that patients with swellings of the joints seldom die. Bilateral dilatation of the pupils was seen in all fulminating and severe cases. Other ocular symptoms seen occasionally were corneal ulceration, hypopyon, and iritis. Severely ill patients lie in coma or delirium with their eyes wide open. Herpes of the lips was seen in a few cases.

EFFECTS OF TREATMENT

Improvement in the breathing was the first sign of recovery, often within an hour of injection. In very ill cases the next most noticeable signs of improvement were the closing of the eyes in sleep, the contraction of the dilated pupils (due possibly to relief of pressure by lumbar puncture), and an indescribable appearance of the eyes, which lose their glazed appearance. Delirium gave place to rational discourse in most severe cases within ten hours—more often in six—and children at the breast began to feed again within three hours after injection, having refused nourishment for a day or so. Patients crawled out to relieve themselves in the evening or walked without a staff, although they had been delirious and unconscious on the morning. Two apparently moribund patients, who had been ill more than ten days, were treated more as a matter of routine than in the hope that they might recover. They recovered, one with deafness and a flaccid paresis of one side of the body, the other with deafness and a similar palsy of the hands.

THERAPY

Sulphanilamide.—When the outbreak started, we were short of Prontosil in the hospital at Wau, but

it happened that British Drug Houses Ltd. sent a sample of 100 tablets of sulphonamide P. (sulphanilamide) to one of us (H. D. F.). The instructions were that one tablet (0·5 g.) should be dissolved in 40 c.cm. of normal saline and given by the intramuscular or intrathecal route at a temperature of not less than 37° C., to ensure that the drug remained in solution. This was an inconveniently bulky quantity for field work. It was found that a precipitate was formed rapidly if the temperature fell below body-heat, and the colour changed to a dirty yellow-red. No ill effects, however, followed injection even of the precipitate, and the results were dramatic. Two of the three bottles of sulphanilamide were broken during sterilisation, and, as the sample was a small one, it was impossible to use more of this medicine. The results, even with the small quantities used, were extraordinary.

Suspensions of M. & B. 693.—The oral administration of even powdered tablets was so difficult in these extremely powerful and violent patients that the method had to be discarded. It was decided instead to try injecting a suspension of very finely powdered tablets in normal saline. We found that one tablet (0·5 g.) to 10 c.cm. of saline was a convenient strength, and we made up the suspension in 100 c.cm. bottles, ten tablets (5 g.) to a bottle. A little powdered gum-acacia helped to keep the drug in suspension but was not really necessary. Serum needles of a fairly large bore were used and did not choke. Later we found that one tablet (0·5 g.) to 5 c.cm. of saline was as easily given. Such saline suspensions are well tolerated even by infants, are not excessively painful, and do not appear to be followed by abscess formation or other ill effects. It is thought that their therapeutic action is more rapid than that of the oily suspension in ampoules issued by the manufacturers. The oily suspension clogged needles, was very difficult to extract, and had to be poured into the syringe, and when this was done the small spherical glass beads acted as valves at the outlet to the needle.

Lumbar puncture and intramuscular injection.—When the first few patients were treated with sulphanilamide, there was a good deal of opposition from Dinkas who, sceptical of the benefit of any drug in cerebrospinal meningitis, refused to produce their sick relations; some patients made such a fuss that lumbar puncture was not performed, an injection in the buttock alone being given, or (if the patient could swallow) prontosil tablets by the mouth. When these patients were again seen, we found that those who had received an injection without lumbar puncture, although improved, were not nearly so well as those who had had lumbar puncture. The patients soon noticed this by themselves and even in mild cases demanded puncture. In the early cases in which puncture had been refused at first and was performed the next morning, the spinal fluid had the reddish-yellow colour of the altered sulphanilamide injected fifteen hours previously, showing that the drug had passed freely into the theca despite the increased pressure of the cerebrospinal fluid. We consider that lumbar puncture should be done in all cases except the very early and the very mild; for, though injection per se brings improvement, combined with lumbar puncture it produces a still more rapid amelioration. If signs of increased pressure still predominate, puncture should be repeated, but it is seldom necessary if full doses of the drug are used. The bulging fontanelle of infants subsided after lumbar puncture, but the swelling soon returned. Within forty-eight hours, however, the fontanelle had again become concave without further removal of fluid, although rigidity of the neck might persist.

Intrathecal injection of the oily suspension of M. & B. 693 was not successful in the few cases treated; much of the suspension was withdrawn at subsequent lumbar puncture, twenty-four, thirty-six, and forty-eight hours later, still in the oily droplets and apparently unchanged.

RELAPSES

In only one case did we see relapse.

A Dinka man was carried in unconscious and with all the signs associated with the fulminating form of the disease. Lumbar puncture was performed, and he received 1·5 g. by the intramuscular route, and 1 g. next day. He went home four days after admission. Five days after his discharge a woman stopped the car and asked one of us to perform lumbar puncture on him. The man had suddenly become ill again with acute pressure symptoms. We removed 50 c.cm. of fluid at once and 100 c.cm. next morning. The fluid was pale yellow and cloudy; nine days previously it had been pure pus. His temperature was subnormal and he returned home and had no other relapse.

A systematic follow-up might have revealed other relapses, but such an inquiry was impossible in the field conditions under which we were working.

ILLUSTRATIVE CASES

CASE 1.—A boy, aged 5, had been ill five days at home. When first seen on Jan. 22, 1939, he was desperately ill, with bronchopneumonia and all the usual symptoms. His cerebrospinal fluid (C.S.F.) was purulent and under pressure. His pupils were widely dilated and immobile, and he was unconscious. Sulphanilamide 0·125 g. was injected intramuscularly and 0·125 g. intrathecally, and prontosil 0·25 g. was given by mouth. On the 23rd he was very much better and sat up and ate by himself in the evening, after again being injected in the morning. C.S.F. (40 c.cm. removed by lumbar puncture) was clearer and reddish. Sulphanilamide 0·25 g. was injected intrathecally and 0·125 g. intramuscularly, and prontosil 0·25 g. was given by mouth. Treatment continued and on the 26th he was sent home on foot to a hut 400 yards away. His total dose in four days was sulphanilamide 1 g. and prontosil 1·5 g.

CASE 2.—A male infant, aged 6 months, had been three days ill at home. C.S.F. (30 c.cm. aspirated) contained pus. On Jan. 23 he was given sulphanilamide 0·125 g. intrathecally and 0·125 g. intramuscularly. On the 24th he was moribund and was given sulphanilamide 0·125 g. intrathecally after lumbar puncture. He died in the afternoon.

In the light of our present knowledge of the tolerance of infants to these drugs a bolder administration of sulphanilamide might have saved this child.

CASE 3.—A girl, aged 10, had been ill ten days and was emaciated and unconscious. Her chest was full of moist sounds. C.S.F. was yellowish-white and very thick (65 c.cm. aspirated).

CASE 4.—A boy, aged 8, had been ten days ill at home. He was unconscious and extremely ill. C.S.F. was very thick (45 c.cm. withdrawn). After a total dose of sulphanilamide 0·5 g. and prontosil 1·5 g. in three days, he was sent home on the 25th.

CASE 5.—A girl, aged 1, had been ill six days at home and was apparently moribund. C.S.F. too thick to aspirate. After a total dose of sulphanilamide 0·75 g. and prontosil 0·5 g. in four days, she was sent home on the 25th with her neck still stiff but otherwise well.

The following is an early case in a child treated by the intramuscular route with M. & B. 693 in saline suspension.

CASE 6.—A female infant, aged 6 months, had been two days ill at home. When first seen on March 3, she was a very sick child, with all the usual symptoms and vomiting. She was given 0·25 g. of M. & B. 693 in saline suspension by intramuscular injection at 10 A.M. C.S.F. (20 c.cm., purulent) was removed at lumbar puncture. At 1 P.M. she was taking the breast. At 6 P.M. her cough was much better. On the 4th she had improved incredibly, and on the 5th she was sent home, apparently quite well and with a concave fontanelle, after a total dose of 0·25 g. of M. & B. 693.

The following is a typical chronic case in a patient who would have died, if untreated, from bronchopneumonia and starvation due to constant vomiting rather than from meningitis. This patient had almost certainly got over the acute infection.

CASE 7.—A boy, aged 6, had been one month at home, with a constant cough resembling whooping-cough, which is much feared by Dinka parents and responsible for much of the infant mortality. He was said by his father to be recovering from cerebrospinal fever, but ill with "the spear cough" or whooping-cough. He had a stiff neck, headache, and a positive Kernig's sign and was very wasted. On Feb. 23 40 c.cm. of turbid C.S.F. under pressure was removed, and 0·5 g. of the oily suspension of M. & B. 693 was given intrathecally and 0·5 g. intramuscularly. Next day 50 c.cm. of C.S.F. was removed, containing oil and M. & B. 693. Injections were given of M. & B. 693 in saline suspension intrathecally and intramuscularly. On the 25th he looked as if he might die. He was given 10 oz. of normal saline subcutaneously, sugar to suck, morphine gr. $\frac{1}{6}$, and injections of M. & B. 693 saline suspension intrathecally and intramuscularly. On the following day he was much better, vomiting and cough ceased, and he could walk with a stick. On the 27th improvement was maintained, and he was given 2 g. of M. & B. 693 by mouth. On March 1 he walked home some three miles. His neck was still stiff, but otherwise he was well. A total dose of 4·5 g. of M. & B. 693 had been given in six days.

The next is a typical mild case in a child. Note the large doses by mouth and absence of toxic symptoms.

CASE 8.—A girl, aged 6, had been ill two days at home, with the usual symptoms of a moderately severe case. On Feb. 18 25 c.cm. of turbid C.S.F. was removed, and 2 g. of M. & B. 693 powdered tablets was given in milk. On Feb. 22 she went home on foot, after having had a total dose of 5·5 g. of M. & B. 693 in four days.

A typical mild case in an infant treated without lumbar puncture and with M. & B. 693 powdered tablets in milk by the mouth:—

CASE 9.—A female infant, aged 6 months, had been ill four days with the usual symptoms. She was sent home with a normal fontanelle and a normal temperature after having had a total dose of 4·5 g. of M. & B. 693 in three days.

A typical fulminating case follows:—

CASE 10.—A woman, aged 55, had been ill twelve hours. On Feb. 25 she was carried in struggling and shrieking, with severe head-retraction (almost opisthotonus) and very bad chest signs. She was given an intramuscular injection of M. & B. 693 in saline and 3 g. of powdered tablets by mouth. By lumbar puncture 80 c.cm. of purulent C.S.F. was removed under high pressure. She was very powerful, fought like a wild cat, and required six men to hold her. She was given gr. $\frac{1}{4}$ morphine at 9.30 A.M. At noon she was better and asked for water. At 6 P.M. she was still very ill but better and was given an intramuscular injection of M. & B. 693 in saline. On the 26th she talked rationally, but had a severe headache. She was given another intramuscular injection of M. & B. 693. Two days later she was sitting and talking with other patients. Her temperature was normal, but she had a very severe headache in the evening. By lumbar puncture 50 c.cm. of C.S.F. was removed under pressure. Another intramuscular injection of M. & B. 693 was given. On the 29th she walked home, free from headache and head retraction, after having had a total dose of 7·5 g. of M. & B. 693 in four days.

Four similar fulminating cases were seen the same day as this patient, and all were so difficult to feed by mouth that no more tablets were given orally, especially as we were short of them.

DOSAGE

From our experience of these cases we consider that the drug should be pushed in big doses from the very first. Improvement is far more rapid if 2·5 g. of M. & B. 693 tablets in saline suspension are given immediately. We have seen no ill effects from this dosage.

A consecutive series of 20 other cases was treated with one dose of 1·5 g. of M. & B. 693 in 30 c.cm. of saline by intramuscular injection, lumbar puncture being performed at the same time. All these cases were in young persons 12–15 years old and were of the fulminating type of less than twelve hours' duration; all the patients were unconscious when admitted. Improvement was so rapid that no further injection was needed, and lumbar puncture was repeated in 6 cases only. All these patients recovered.

The doses given in the 160 successful cases are summarised in the accompanying table.

ANALYSIS OF SUCCESSFUL RESULTS

Age-group	Type of attack	Cases	Average total dose of M. & B. 693 (grammes)
Infants and children under 5	Mild	15	0·5
	Severe and fulminating	40	1·25
Children aged 5–14	Mild	15	1·25
	Severe and fulminating	50	2·0
Adults	Mild	6	2·25
	Severe and fulminating	34	3·25

SUMMARY AND CONCLUSIONS

(1) In an outbreak of cerebrospinal meningitis, treated under field conditions, among the Dinkas of Sudan, 21 patients were treated with sulphanilamide and prontosil, with only 1 death.

(2) In the same outbreak 168 patients were treated with M. & B. 693 in saline suspension, with 8 deaths: 4 in children (of whom 2 did not react to the drug and 2 were epileptic); 1 in an adult woman who was an insane epileptic; and 3 in patients who had been ill too long before seeking treatment.

(3) The percentage of recoveries in both series was 95.

(4) The rate of recovery appeared to be directly proportional to the quantity of the drug administered at the initial injection and to the rapidity with which the patient was treated after the onset of symptoms.

We are indebted to the Director of the Sudan Medical Service for permission to publish this paper;

to the numerous Sudanese dressers who willingly entered into the treatment of this dangerous and infectious disease in overcrowded, dark, and airless huts; and to the many nameless Dinka "medicine men" who forsook their own lucrative practices and used their authority in encouraging patients to come to us.

ANTERIOR DISLOCATIONS OF THE SHOULDER-JOINT

By C. H. Gray, F.R.C.S.

ASSISTANT ORTHOPÆDIC SURGEON TO THE VICTORIA HOSPITAL FOR CHILDREN, TITE STREET, LONDON; LATE REGISTRAR IN THE FRACTURE AND ORTHOPÆDIC DEPARTMENT, MIDDLESEX HOSPITAL

Opportunities to examine a dislocated shoulder-joint at operation or post mortem are very rare, but some idea of the injuries involved may be obtained by experiments on the cadaver. It is not easy to dislocate the shoulder of a corpse, but it may be done by a combination of elevation and external rotation. The condition of the joint and surrounding structures may then be examined by the following dissection.

Expose the joint by reflecting the deltoid and pectoralis major downwards from their origins. The three muscles arising from the coracoid process will be found to be stretched tightly over the head of the humerus. The head itself, partially covered by the subscapularis, is lying immediately below the coracoid process and possibly in contact with it, whilst the lower part of the articular surface is in view below the inferior edge of the subscapularis. A considerable portion of the articular surface is in contact posteriorly with the neck of the scapula, from which the subscapularis has been elevated.

Now reflect the three muscles downwards from the coracoid process, and examine the supraspinatus and infraspinatus tendons. The supraspinatus tendon is not under great tension, but it is impacted against the coracoid process. The infraspinatus tendon is stretched over the glenoid cavity and is necessarily subjected to great tension.

The circumflex nerve traverses the anterior surface of the subscapularis and then turns backwards through the quadrilateral space. The patient with a dislocated shoulder usually comes to hospital with his arm in a sling—i.e., with the humerus rotated inwards. In the post-mortem specimen it will be seen that with the arm in this position the circumflex nerve may easily be trapped between the dislocated head of the humerus and the anterior margin of the glenoid cavity. The nerve is compressed just below the inferior margin of the subscapularis. External rotation at once relieves the pressure (figs. 1–4).

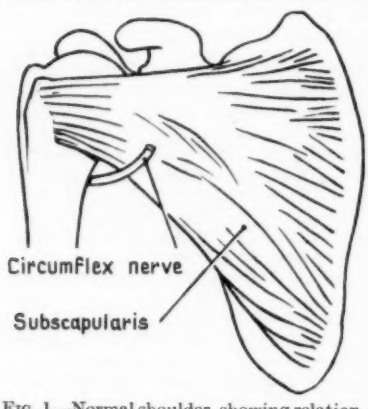


Fig. 1—Normal shoulder, showing relationship of circumflex nerve to subscapularis muscle.

By dividing the tendon of the subscapularis, expose the capsule of the joint. It will be found to have ruptured close to its glenoid attachment. The rent is vertical, and about 1½ in. long. The glenoid ligament is not disturbed from its attachment to the scapula.

In two out of seven shoulders examined in this way a fracture of the upper part of the greater tuberosity was found. This type of fracture is a frequent complication of dislocation of the shoulder-joint; according to Nash (1934) it occurs in about 20 per cent. of cases. Codman (1934) has shown that it is produced by the impact of the greater tuberosity on the upper margin of the glenoid cavity when the arm is violently abducted by the dislocating force.

It will be seen that dislocation of the shoulder-joint is by no means a trivial injury. The capsular tear is overshadowed in importance by the risk of damage to three important structures. Thus, the supraspinatus tendon is forced against the coracoid, and may be seriously bruised or torn. The infraspinatus tendon is stretched across the glenoid cavity, and cases have been recorded in which it has been completely ruptured. Finally, the circumflex nerve is menaced by compression between the head of the humerus and the neck of the scapula.

Technique of Treatment

For this injury the standard treatment consists of reduction by Kocher's method, followed by immobilisation of the joint, with the arm bandaged to the side or in a sling, for three weeks or more. The object of this paper is to advocate a simpler and more effective method of reduction, by simple manual traction without anæsthesia, and to condemn the practice of immobilising the joint. There is nothing new in these ideas. They have often been put forward in the past, but they have not been widely accepted, although surprisingly bad results have been revealed by observations in various clinics where the standard treatment has been used.

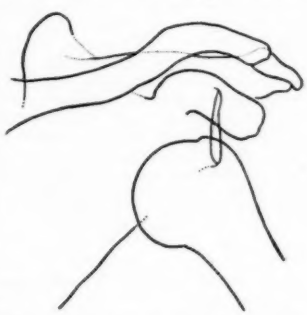


Fig. 2—Tracing from radiogram of dislocated shoulder-joint. Note close proximity of supraspinatus facet to coracoid process.

Schultz (quoted by Stevens 1926) examined 160 cases in Kutner's clinic. Of these 54 were uncomplicated dislocations, and yet all but 7 were left with some permanent disability. Rogers (1934) reported 13 cases. All were reduced within 24 hours, and then immobilised for about a fortnight. Of the results, 5 were classed as poor or bad, and those who recovered completely took from three months to a year to do so. White (1922) commented on the frequency of poor results, and classified them in five groups: (1) General stiffness. (2) Limited abduction with no atrophy of the deltoid (by this he obviously means the supraspinatus syndrome). (3) Limited abduction with gross atrophy of the deltoid. (4) Nerve palsies. (5) "Arthritis"—manifested by pain, stiffness and grating. Gubler (1922) observed that fracture of the greater tuberosity associated with dislocation entailed on the average a 17 per cent. residual disability.

These results leave room for improvement.

REDUCTION

Kocher's manipulation is performed as follows:—

The arm, with the elbow flexed, is pressed against the side of the body. The humerus is then externally rotated until resistance is encountered, and at this point the elbow is brought forwards, with the arm in the sagittal plane, as far as it will go. Slow inward rotation of the arm completes the manœuvre.

Kocher (1870) believed that muscular relaxation was unnecessary for the reduction of a dislocated shoulder-joint. The manœuvre of external rotation was designed not to fatigue the subscapularis, but to twist the upper part of the capsule into a cord that would provide a point d'appui for the leverage exerted on the head of the humerus by means of the shaft. External rotation also causes the greater tuberosity to impinge against the anterior margin of the glenoid, and this he considered to be an essential part of the mechanism of reduction. For this reason, Kocher stated that fracture of the greater tuberosity rendered his method of reduction unsuitable. He believed that these exceptions would be few, but we know from routine X-ray examination of dislocated shoulders that they represent a formidable proportion of the whole. It is clear also that tears of the upper part of the capsule, which have been found in some autopsy specimens, would prohibit the mechanism which Kocher envisaged. However, experiments on the cadaver show that the capsule does not behave in the way he described. Kocher's manipulation, then, can be assailed theoretically from many angles. It is mechanically unsound.

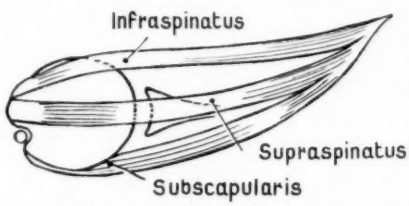


FIG. 3—View from above of normal shoulder-joint (diagrammatic).

These theoretical considerations would be unimportant if the manipulation were successful in practice. Kocher himself failed only three times in 300 cases, but in other hands the method has not yielded such excellent results. It frequently fails, and when consistent success is claimed from its use it is probable that the manipulator has made it efficient by altering the technique. In fact, Kocher's manipulation is seldom performed according to the original description. Traction is nearly always added to the manœuvres and is, I believe, the element most essential for success. It therefore seems preferable to employ traction alone, discarding the other manœuvres because they are dangerous. The leverage exerted by the shaft of the humerus is very great, and is capable of damaging important structures. Rarely the shaft of the humerus has been fractured, but actually the soft parts are in greater hazard, a fact which is vividly presented when Kocher's manipulation is performed on the post-mortem specimen. The supraspinatus tendon is ground and levered against the coracoid process, and the infraspinatus tendon, already tense, is stretched still further.

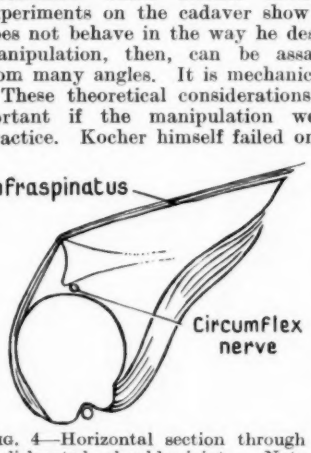


FIG. 4—Horizontal section through dislocated shoulder-joint. Note stretching of infraspinatus tendon. Circumflex nerve in danger.

FIG. 5—Reduction by traction.

The method of reduction which is now to be described is easy to perform and does not in any way menace the joint or its surroundings. The following routine is recommended.

Obtain a preliminary radiogram to establish the position of the head and the presence or absence of fractures. Test for paralyses of the circumflex, median, radial, and ulnar nerves. Place the patient supine on a couch. He lies with the injured arm by his side, and with the humerus in a position of internal rotation. The joint is usually very painful. Gripping the limb by the elbow and forearm, pull firmly downwards. The pain disappears as soon as traction is begun, and an anæsthetic is unnecessary. Maintain the traction and bring the arm slowly away from the side of the body until it is in 90° of abduction. At this point the head will slip into the socket. If it fails to do so at once, encourage it by pressing lightly with the fingers of one hand. If necessary an assistant must apply counter-traction with an arm around the patient's chest. Finally, have another radiogram taken to verify the reduction (fig. 5).

It is important to realise that difficulty in reduction usually means that there is in the dislocation an abnormal element against which the exhibition of force would be not only futile but dangerous. Operation should then be advised. The following is a case in point.

A dislocated shoulder-joint was shown by radiography to be complicated by a fracture of the greater tuberosity. A large fragment, involving the whole of the greater tuberosity, had been detached from the humerus. An attempt to reduce the dislocation by manipulation failed, and operation was therefore performed. When the joint was exposed it was found that the tendon of the long head of the biceps had escaped from its groove, slipped across the fractured surface, and taken up a position behind the head of the humerus, where it presented an insuperable obstacle to reduction.

AFTER-TREATMENT

The following table, published by de Marbaix (quoted by Schlaepfer 1924), speaks for itself.

After-treatment	Average time for recovery (days)
Immediate mobilisation	18
Immobilisation for 1 week	55
,, ,, 2 weeks	121
,, ,, 3 ,, ...	300

Everyone will agree that immobilisation of the shoulder-joint after a dislocation leads to stiffness, yet many continue to practise it as a safeguard against recurrence, either immediate or remote. It may be said at once that, unless the glenoid process has been fractured, active movements may be permitted as soon as reduction has been performed, without fear of recurrence. Why should the dislocation recur? The capsule is torn, but in any case plays a very minor part in securing the stability of the joint. At the shoulder, of all joints, stability depends not on the capsule, nor on the shape of the articulating surfaces, but on the muscles surrounding the joint; and the muscles will prevent redislocation.

It is our custom, as soon as the dislocation is reduced, to ask the patient to stand, and to instruct him to put the joint through a full range of active movement in every direction. The majority of patients are able to achieve full abduction and elevation, and to rotate the humerus internally and externally, without difficulty. If there is much pain a sling is permitted for 24 hours after reduction, but this is usually unnecessary. Active (not passive) movements are begun at once, and the joint is not restricted in any way.

The danger of recurrent or habitual dislocation remains to be considered. It is difficult to believe that lack of immobilisation of the joint after a primary dislocation can be responsible for recurrence of the dislocation. I have not seen many cases of recurrent dislocation, but as it happens in all of them the shoulder-joint was immobilised for several weeks after the primary dislocation. On the other hand, I have seen many cases of dislocated shoulders in which immediate active movements were permitted, and so far none has recurred. De Marbaix reports 157 cases in which the shoulder-joint was not immobilised after reduction, and there were no recurrences.

In a case of recurrent dislocation the successive luxations are evoked with a facility which suggests that there is some grave blemish in the structure of the joint. Bankart (1938) has established the nature of this defect. Describing the operative findings that have been present without exception in a series of 30 cases, he says,

"The head shears off the fibrocartilaginous glenoid ligament from its attachment to the bone. The detachment occurs over practically the whole of the anterior half of the glenoid rim. The reason why the dislocation recurs after reduction is that, whereas a rent in the fibrous capsule heals rapidly and soundly, there is no tendency whatever for the detached glenoid ligament to reattach itself to the bone. The defect in the joint is therefore permanent, and the head of the humerus is free to move forwards over the anterior rim of the glenoid cavity on the slightest provocation."

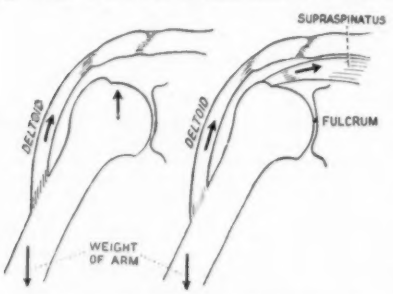


FIG. 6—Action of supraspinatus muscle.

How this defect is produced need not be discussed here, but the lesion is obvious at operation, and anyone who has seen it will be convinced that it could never be induced to heal by immobilising the joint after the initial dislocation which produces it. The lesion can only be repaired by surgical measures.

We have, therefore, no reason to oppose the principle of immediate active use of the shoulder after the reduction of a dislocation. No uncomplicated dislocation need be immobilised at all. Free movements may be permitted as soon as the dislocation has been reduced. By this means recovery will be accelerated if the dislocation is of the ordinary type, and if the lesion which leads to recurrence is present no harm will be done, because such a lesion cannot be influenced by immobilising the joint.

Complications

The three most common complications are: (1) fracture of the greater tuberosity; (2) injury of the supraspinatus tendon; and (3) nerve palsy. The first two of these are often present, the third very rarely. Fractures of the greater tuberosity are, of course, revealed by radiography. Injuries of the supraspinatus tendon, although invisible radiographically, are associated with definite clinical signs, and are easily diagnosed; they will be considered first.

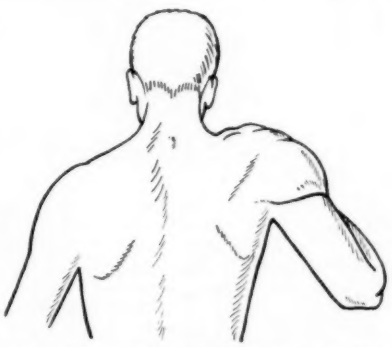


FIG. 7—Supraspinatus syndrome. Deltoid contracting strongly but abduction is limited and is purely scapulo-thoracic. Note characteristic "hunching" of shoulder.

INJURY TO THE SUPRASPINATUS TENDON

In the description of a dislocated shoulder-joint dissected in the post-mortem room, it was noted that the supraspinatus tendon is seriously menaced by its proximity to the coracoid process. At the moment of dislocation the head of the humerus may impinge on the coracoid process with a violence sufficient to bruise or even rupture the supraspinatus tendon, and unskilful attempts to reduce the dislocation may cause further damage by grinding the tendon between the head of the humerus and the coracoid process. It is not surprising, therefore, that clinical signs of supraspinatus dysfunction should very frequently be present during recovery from a dislocation of the shoulder-joint.

The syndrome associated with this type of injury is well known. The supraspinatus muscle is a synergist of the deltoid. During abduction of the arm by the deltoid the head of the humerus tends to slip upwards over the glenoid fossa. The supraspinatus, pulling transversely, holds the articular surfaces firmly together, thus supplying a fulcrum against which the deltoid works (fig. 6). Injuries of the supraspinatus tendon therefore interfere with abduction

of the arm. The supraspinatus syndrome presents the following combination of signs.

(*a*) Active abduction is limited to about 40°, and this range of abduction is obtained by scapulo-thoracic movement only; there is no scapulo-humeral movement.

(*b*) The deltoid can be felt to contract strongly, thus excluding circumflex palsy.

(*c*) Passive abduction is not limited—i.e., stiffness is not the cause of the disability (figs. 7 and 8).

FIG. 8—Supraspinatus syndrome. Passive abduction is not restricted.

This syndrome may be produced by a contusion of the tendon, in which case the disability will be transient, or by a complete rupture, in which case it will be permanent unless operative repair is undertaken. It is difficult to evaluate the severity of the injury to the tendon. The ambiguous nature of the supraspinatus syndrome has been discussed by the present writer in an earlier communication (1938). Complete rupture is very rare as a sequel of dislocation of the shoulder-joint, and as a rule recovery from a tendon injury may be confidently anticipated, though the syndrome may persist for several months.

In these cases the after-treatment of the dislocation must, of course, be modified. Such active movements as the patient is capable of performing are permitted as before, but in addition, to prevent stiffness, the joint must be put through a full range of passive movement every day. After a week there is usually evidence that recovery is taking place. The range of movement increases, and the shoulder becomes more powerful.

There are a few cases in which this improvement does not take place, presumably because the supraspinatus tendon has suffered a more serious injury, perhaps involving also the tendon of the infraspinatus. The reasonable course in these circumstances is to rest the tendons for a time. This cannot be done by supporting the arm in a sling. In the sling position the weight of the arm is allowed to drag upon the supraspinatus tendon, and since the humerus is in the position of internal rotation, the infraspinatus tendon is stretched, and not relaxed as, on physiological grounds, it ought to be. Obviously the shoulder should be supported on an abduction splint to hold the humerus in 90° of abduction, 30° in front of the coronal plane, and about 40° of external rotation. In this position the damaged tendons are satisfactorily relaxed.

In practice, the abduction splint is very rarely required because the majority of these tendon injuries show early signs of spontaneous recovery. Operation is necessary for only a minute proportion of the cases, but it is important to remember that complete rupture of the supraspinatus tendon can happen as a complication of dislocation, and will demand operative repair. Complete ruptures may be diagnosed at an early stage from the severity of the disability, and the presence of a palpable gap in the tendon. Others are suspected only after a long period of expectant treatment has failed to produce a cure. The prospects of successful operative treatment fade rapidly if the diagnosis is delayed.

FRACTURE OF THE GREATER TUBEROSITY

Reference has already been made to the series of 127 dislocations quoted by Nash, in which fracture of the greater tuberosity was present in 22 per cent. This is probably a fair index of its frequency. The separated fragment is usually small, comprising that upper part of the greater tuberosity where the supraspinatus tendon is inserted; but occasionally a large fragment, involving the whole of the greater tuberosity, may be broken off. The fracture is produced by the impact of the greater tuberosity on the upper border of the glenoid process when the humerus is violently abducted during the process of dislocation. The small fragment thus isolated remains almost in situ, sustained by the musculo-tendinous cuff in which it is embedded. In these cases, radiography after reduction nearly always shows that the small fragment is perfectly coapted to the head of the humerus, and there is as a rule no tendency to displacement, immediate or remote. Rarely the small fragment is retracted by the supraspinatus muscle and is to be seen radiographically lying under the coraco-acromial arch.

It might be expected that these fractures, involving as they do the supraspinatus facet, would impair the action of the supraspinatus muscle, and in fact they often do so, but not always. In the exceptions abduction is unaffected because, although the supraspinatus cannot act directly on the humerus, the other components of the musculo-tendinous cuff (the subscapularis and infraspinatus) are able to do so, and they control the head of the bone whilst the deltoid abducts the shaft.

If there is no displacement at the fracture site the after-treatment of the dislocation need not be modified. Unrestricted active movements are permitted, with the addition of a full range of passive movements every day if the supraspinatus syndrome is present.

Displacement of the small fragment is equivalent to a complete rupture of the supraspinatus and may be treated by placing the arm on an abduction splint in the optimum position (90° abduction, 40° external rotation, and 30° in front of the coronal plane). In this position the detached fragment is accurately approximated to the raw area from which it was displaced. The splint must be worn until the arm can be actively elevated away from it. As a rule splintage is required for about two months. Some patients are very reluctant to wear an abduction splint, and may be offered the alternative of operative reduction.

NERVE PALSY

In our experience paralysis has happily been uncommon as a complication of dislocation of the shoulder-joint. Some authors, however, have reported an extremely high incidence of nerve injuries. Thus, Murray (1931) estimated the incidence of nerve palsy at 55 per cent., and White (1922) at 20–30 per cent. Gubler's (1922) figure of 3·9 per cent. is much nearer our own experience.

During dislocation of the shoulder-joint nerves may be injured in two different ways. In the first place, during the forcible abduction which precedes dislocation the neurovascular bundle is stretched tightly over the head of the humerus. This is the mechanism by which paralyses of median, radial and ulnar nerves are produced.

The circumflex nerve may be injured in the same way, but it is exposed to an additional danger. The

dissection of a dislocated shoulder-joint showed how, when the humerus is internally rotated, the head of the humerus may roll on to the circumflex nerve and crush it against the antero-inferior margin of the glenoid (fig. 4).

These nerve injuries are rarely complete. The paralysed muscles should be supported in a position of relaxation by suitable splints, whilst massage and electrical stimulation are used to preserve their nutrition.

Reviewing the complications as a whole, it will be seen that the tendon injuries are of paramount importance. The integrity of the supraspinatus tendon and its facet of insertion is the dominant factor. Nerve injuries occupy a subordinate position because they are so uncommon.

Results

The records of 30 cases treated by the method advocated in this paper are given below. In 19 there was no bony injury; in the remaining 11 there was a fracture of the greater tuberosity.

In the *cases with no bony injury* the results were as follows.

	Cases
Complete recovery (average time twelve days)	15
Slight permanent limitation of movement	1
Poor result (marked stiffness) (a woman of 60)	1
Complete rupture of supraspinatus tendon	1
Circumflex palsy	1

The supraspinatus syndrome was present in 5 cases in this group. It was transient in 4 of them, but the fifth case did not improve and operation revealed a complete irreparable rupture of the tendon.

Cases with fracture of the greater tuberosity.—Of 9 cases without displacement 7 recovered completely in an average period of nine weeks and 2 showed a fair result (80 per cent.). The supraspinatus syndrome was present for a time in 2 cases of this group. Of 2 cases with displacement, in both of which the supraspinatus syndrome was present, recovery was complete in periods of four months and six months.

Summary

Dissection of a dislocated shoulder-joint in the cadaver illustrates the danger of injury to (*a*) the supraspinatus tendon; (*b*) the infraspinatus tendon; (*c*) the circumflex nerve.

Kocher's method of reduction increases the risk of injury to the tendons, and in addition is mechanically unsound. Reduction by manual traction on the abducted arm, without anæsthesia, is recommended.

Immobilisation after reduction leads to prolonged disability. Active movements should be allowed at once, except in the presence of certain complications.

Of 19 uncomplicated cases treated on these lines 15 recovered completely within 12 days; of 11 with fractures of the greater tuberosity 9 recovered completely but recovery was considerably delayed.

I am indebted to Mr. Blundell Bankart for permission to use the case-records quoted in this paper, and to the director of the Bland-Sutton Institute of Pathology for opportunities of post-mortem study.

REFERENCES

Bankart, A. S. B. (1938) *Brit. J. Surg.* **26**, 23.
Codman, E. A. (1934) The Shoulder, Boston.
Gray, C. H. (1938) *Lancet*, **1**, 483.
Gubler, H. (1922) *Schweiz. med. Wschr.* **52**, 960.
Jones, R. W. (1932) *Brit. med. J.* **2**, 80.
Kocher, T. (1870) *Berl. klin. Wschr.* **7**, 101.
Murray, C. R. (1931) *J. Amer. med. Ass.* **96**, 337.
Nash, J. (1934) *J. Bone Jt Surg.* **16**, 535.
Rogers, H. (1934) *New Engl. J. Med.* **210**, 679.
Schlaepfer, K. (1924) *Amer. J. med. Sci.* **167**, 244.
Stevens, J. H. (1926) *Ann. Surg.* **83**, 84.
White, M. (1922) *Trans. med.-chir. Soc. Glasg.* **243**, 29.

HERPES ZOSTER AND VARICELLA
SIMULTANEOUSLY IN THE SAME PATIENT

BY D. G. FERRIMAN, B.M. Oxfd, M.R.C.P.
MEDICAL REGISTRAR AT WESTMINSTER HOSPITAL, LONDON

Von Bokay seems to have been the first to draw attention to the clinical association of herpes zoster and varicella. Since his time many instances have been noted of zoster arising in contacts of varicella patients, and a much smaller number of cases of varicella in zoster contacts. Cross-agglutination and cross-complement-fixation tests between convalescent zoster and varicella sera, and the virus suspensions from the vesicles of the two diseases, have shown the two organisms to be similar if not identical (cf. Amies 1934, Netter and Urbain 1926). The Shelmires (1928), quoting Kundratitz, record the appearance of varicella eruptions in children inoculated with the contents of zoster vesicles; only those children who had not had varicella acquired the disease, and subsequently these became immune to it.

The simultaneous occurrence of herpes zoster and varicella in the same patient is not common, and for this reason the following case is recorded. Dr. J. L. Franklin was kind enough to see the patient and confirm the diagnosis.

CASE-RECORD

An otherwise healthy man of 58 suffered from osteo-arthritis of the hip, for which he was given short-wave diathermy twice a week. On Dec. 14, 1938, after the fifth treatment, a throbbing pain started in his right groin and became steadily worse for four days. A zoster eruption then appeared in the right groin and gluteal region, with a few isolated vesicles on the front of the thigh. The distribution was approximately that of L. 1 and 2, and to a slight degree L. 3. The vesicles in the groin and on the buttock were massive and confluent. Two days later a typical varicella eruption appeared. The vesicles came out in crops and were centripetal in distribution; some were found among the hairs and in the buccal cavity, but none on the palms or soles.

The temperature was normal on Dec. 14, 99·4° F. on the 19th, and 99·6 F. on the 20th and then returned to normal. Both sets of vesicles had dried by the 21st, and their scabbing was almost complete by the 25th. By Jan. 12 nearly all the scabs had disappeared, the zoster scabs being the last to separate. The pain had much improved by Dec. 31, and could be controlled with Veganin. About Jan. 2 troublesome hyperæsthesia of the skin of the right groin and gluteal region appeared. This and the pain were still present on the 28th but were then negligible. The patient felt extremely lackadaisical for some time, but was able to return to work.

A certain amount of both varicella and zoster was epidemic in the neighbourhood at the time, but no direct history of contact or of passage could be obtained.

DISCUSSION

In a review of the literature up to 1923 Parounagian and Goodman (1923) found records of 29 cases in which zoster and varicella occurred together, and in subsequent papers I have found references to 50 others and detailed records of 19 more. In some of these 19 cases the records were incomplete, but so far as they were available the details of these (including the one case reported here) were as follows. Of 17 patients 12 were over fifty, and 16 out of 19 were males. (These figures are strictly comparable with those obtainable from Parounagian and Goodman's paper; of the

cases they collected 17 out of 26 were over fifty, and 20 out of 27 were males). Zoster was invariably either coincidental with or antecedent to the varicella, the longest interval being twelve days; in 12 out of 15 cases the interval was five days or less. Netter's (1920) findings in 16 cases were similar to these. In 7 cases the patients had been in contact with either varicella or zoster. Severity is difficult to assess, but I did get the impression that most of the cases were severe. A significant feature is that 2 died and 1 was apparently only saved by convalescent serum.

Tenneson is said first to have drawn attention to the occurrence of scattered groups of zoster vesicles away from the main eruption, and this type of case must be clearly distinguished from that discussed here. The aberrant vesicles of zoster show their nature by their spinal-root distribution and by the absence of the characteristics of a varicella eruption. An extreme type of this condition is the so-called generalised herpes zoster. The spinal-root distribution is absent from the cases described in this paper, and the eruption has all the characteristics of varicella. It comes out in crops, is centripetal in distribution, and may be found in the hair and on the mucous membranes; generally speaking it avoids the palms and soles.

Three main explanations of the zoster-varicella association are possible. First, the two diseases may be caused by two different organisms, their clinical association being purely fortuitous. Secondly, the two disease syndromes may be caused by the same virus, which acting via the posterior-root ganglia gives rise to zoster and via the blood-stream to varicella. Thirdly, the viruses may be quite distinct, giving rise each to its particular clinical picture, but being closely related antigenically and capable of changing the one into the other. This last explanation would account for some of the anomalies in the cross-immunity reactions (Amies 1934).

The type of case I am reporting is at least consistent with the close relationship if not identity of the organisms responsible for the two syndromes.

SUMMARY

A case of herpes zoster and varicella arising simultaneously in the same patient is described and reference is made to others recorded elsewhere. The condition is most common in elderly men, and the appearance of the varicella usually follows the zoster within five days. Such cases support the view that the eruptions are caused by identical or closely related organisms.

REFERENCES

Amies, C. R. (1934) *Brit. J. exp. Path.* **15**, 314.
Netter, A. (1920) *Bull. Acad. Méd. Paris*, **83**, 588.
— and Urbain, A. (1926) *C.R. Soc. Biol. Paris*, **94**, 98.
Parounagian, M. B., and Goodman, H. (1923) *Arch. Derm. Syph., N.Y.* **7**, 439.
Shelmire, J. B., and Shelmire, B. (1928) *Ibid*, **17**, 687.

Barling, B., and Cahill, J. (1930) *Brit. med. J.* **1**, 823.
Cornil, L., and Blanc, F. (1931) *Rev. neurol.* **2**, 123.
Cummings, J. N. (1930) *Lancet*, **1**, 1125.
Hardisty, R. H. M. (1936) *Canad. med. Ass. J.* **35**, 310.
Hutton, P. W. (1935) *Lancet*, **2**, 302.
Lortat-Jacob, L., and Pouméau-Delille (1929) *Bull. Soc. franç. Derm. Syph.* **36**, 642.
Louste, A., and Lévy-Franckel, A. (1930) *Ibid*, **37**, 1105.
Lowe, G. H., and Somasundaram, A. (1936) *Malaya med. J.* **11**, 227.
Lowson, J. M. A. (1929) *Brit. med. J.* **2**, 1157.
McCormick, R. R. (1931) *J. Amer. med. Ass.* **96**, 766.
Quermonne, L. (1932) *Bull. Soc. méd. Hôp. Paris*, **48**, 1352.
Rabut, R., and Chêne, P. (1928) *Bull. Soc. franç. Derm. Syph.* **35**, 532.
Silcock, F. A. E. (1933) *Brit. med. J.* **2**, 149.
Simon, C., and Coignerai (1930) *Ibid*, **37**, 680.
Touraine, A., and Golé, L. (1932) *Bull. Soc. franç. Derm. Syph.* **39**, 652.

THROMBOCYTOPENIC PURPURA

REPORT OF A CASE

BY G. H. JENNINGS, M.D. Camb., M.R.C.P.

PHYSICIAN TO THE REDHILL COUNTY HOSPITAL, EDGWARE; LATE FIRST ASSISTANT AT THE BRITISH POSTGRADUATE MEDICAL SCHOOL; AND

L. I. M. CASTLEDEN, M.D. Lond., M.R.C.P.

DEMONSTRATOR OF CLINICAL MEDICINE IN THE BRITISH POSTGRADUATE MEDICAL SCHOOL

ESSENTIAL thrombocytopenia is characterised by multiple hæmorrhages into the skin or mucous membranes, a reduced platelet count, a prolonged bleeding-time, and a normal coagulation-time with a blood-clot that does not retract. The ætiology of the condition is obscure, and its causation has at different times been ascribed to:—

(1) A defective production of platelets by the marrow, either because there is a megakaryocyte aplasia or because their maturation does not occur. Inhibitory substances produced by the spleen have been postulated (Minot 1917, Askanazy 1930, Frank 1915).

(2) A damaged capillary endothelium, possibly due to some splenic substance, to which the reduction of platelets is a secondary phenomenon. There seems to be no doubt that some vascular changes occur in the disease, and it has been shown both clinically and experimentally that the platelets can be reduced without hæmorrhage. If the capillary endothelium is damaged, however, when the platelet count is low, purpura develops which is said to be proportional in severity to the lack of platelets (Whitby and Britton 1935).

(3) An excessive destruction of possibly defective platelets by the spleen (Kaznelson 1916); but, although splenectomy may alleviate the purpuric symptoms, the platelet count may not rise, or the postoperative rise may soon fall again to the former level.

The thrombocytopenia seems to be one factor which with others is operative in producing the condition, because a critical level of 40,000 platelets below which purpura develops has been described in some patients, in whom raising the count above this figure by transfusion of whole blood, each 400 c.cm. of which contributes some 40,000 platelets per c.mm. to the circulation, causes a temporary cessation of the hæmorrhagic tendency.

The spleen is implicated in the various theories of the causation because splenectomy so often alleviates the condition. Spence (1928), reviewing 101 cases of splenectomy performed for thrombocytopenia, found that there was a cure in 85 per cent. of chronic cases, improvement in 10 per cent., and failure in 5 per cent. It seems worth while therefore to report a case in which neither transfusion nor splenectomy had more than slight and transient influence on the hæmorrhagic tendency, and in which the management of severe uterine hæmorrhage continuing after these procedures presented a problem in therapeutics.

CASE-RECORD

Mrs. A. B., aged 33, a bakery hand, was admitted to Hammersmith Hospital on Jan. 5, 1938, under the care of one of us (G. H. J.). She complained of excessive loss at her periods and bruising of the skin.

Her periods began at the age of 14 and had always been regular, with a moderate loss for five days, until four months before admission, when she had a profuse loss at the expected time. This was repeated at subsequent periods, the loss tending to become more profuse and to be more prolonged each time.

Three weeks before admission she noticed on the backs of her hands bruises which were painless and not related to injury. Other bruises appeared soon afterwards on her legs and later all over her body. One week before admission her tongue was very sore, and a crop of "blood-red ulcers" appeared, which had healed before admission. She complained of no other symptoms, and her diet had been adequate.

Past history.—Her childhood had been healthy except for frequent sore-throats and growing-pains. Eight years previously she had had an abscess in the lower jaw after the extraction of a tooth. Two years previously there had been bleeding of the gums, for which all her remaining teeth had been extracted. She had remained well since then up to the onset of her present illness. She had had two pregnancies with normal confinements and puerperia. There had been no miscarriages.

Family history.—Her family came of healthy stock, and none of them had shown any undue tendency to bleed.

On admission she was a well-nourished, stockily built, and rather pale woman, with a normal temperature and normal pulse-rate and respiration-rate. There were several large ecchymoses on her legs, thighs, and arms, and a petechial eruption all over her body. A few petechiæ were present on the tongue, but all other mucous membranes were normal. In the cardiovascular system there was an apical systolic murmur but no other abnormality. The blood-pressure was 110/70 mm. Hg. The lungs were normal, as was also the abdomen, neither the liver nor the spleen being palpable. The right pupil was larger than the left, but both reacted to light and accommodation, and the central nervous system was otherwise normal. A profuse menstrual loss was occurring.

A blood-count showed:—

Red cells	4,400,000	Polymorphs	75%
White cells	8000	Lymphocytes	23%
Hæmoglobin	62%	Monocytes	1%
Platelets	54,000	Basophils	1%

No abnormal cells were seen. The bleeding-time was 20 minutes and the coagulation-time normal. A tourniquet test was strongly positive.

A diagnosis of thrombocytopenic purpura was made and the patient put on iron and ammonium citrate gr. 90 daily.

Course of illness.—On Jan. 8, 1938, the menstrual loss ceased, but fresh ecchymoses and petechiæ were still appearing. Further platelet counts on the 11th and 13th gave figures of 75,000 and 80,000 respectively, and examination of the clot on the 13th showed no retraction.

On the 15th a transfusion of 600 c.cm. of citrated blood (group 2) was given, but on the 18th profuse uterine bleeding started again and fresh crops of petechiæ and ecchymoses appeared. A blood-count on the 19th showed red cells 5,300,000, hæmoglobin 100 per cent., white cells 5000, and platelets 53,000.

The uterine bleeding ceased after three days, and, although fresh crops of petechiæ appeared and the platelet count remained low (53,000–62,000), the patient appeared to be improving.

On the 24th, with the platelet count at 54,000, there was a particularly severe petechial eruption on the legs and thighs and from the 25th to the 29th (inclusive) 10 mg. of citrin (vitamin P) was given intravenously each day but without any effect on the capillary-resistance test.

By the date of discharge (Feb. 4) the patient was perfectly well and had no anæmia or rash. Had it not been for the platelet count (46,000) and the positive capillary-resistance test, she might have been thought to be fully recovered. However, on the 18th she had to be readmitted on account of general weakness and a fresh widespread outburst of petechiæ.

Her blood-pressure, which always tended to be subnormal, was only 90/60 mm. Hg, and there was again some anæmia (hæmoglobin 76 per cent.). On the 14th profuse intermenstrual uterine hæmorrhage began again, and the hæmoglobin fell rapidly to 40 per cent. by the 18th. On this date the uterine bleeding showed no signs of abating, fresh ecchymoses and petechiæ continually appeared, and it was evident that only urgent treatment would prevent the patient from bleeding to death. A transfusion of 600 c.cm. of citrated blood was given on the 19th. Uterine bleeding gradually lessened during the next week but did not cease. On the 25th the blood-count was: 3,400,000 red cells, hæmoglobin 56 per cent., and 49,000 platelets. The hæmorrhage continued with only moderate loss until the end of the month, and then, another period being due, it increased again, and there were further petechial outbreaks. So profuse was the uterine hæmorrhage that the uterus had twice to be plugged, but the bleeding was not controlled, and it was decided to remove the spleen.

Date in 1938	Menstrual loss	Spontaneous	Red blood-cells (c.mm. millions)	Hæmoglobin (per cent.)	Platelets (c.mm. thousands)	White blood-cells (c.mm. thousands)	Bleeding-time (Dukes's method) min.	Tourniquet test
Jan.								
4	++	E P	4·400	62	54	8	20+	++
8	St	E P	..	..	..	..	..	++
15	..	..	..	..	64	..	..	..
19	++	E P	5·300	100	53	5	..	..
20	++	P	..	..	62	..	..	..
24	..	P++	..	..	54	..	..	+
Feb.								
1	..	..	..	..	46	..	..	++
3	..	..	..	..	52	..	20+	..
10	..	P++++	..	..	..	..	..	..
14	++	P++E+	4·500	76	42	9	..	..
17	++	..	..	48	..	..	..	..
18	+	..	..	40	40	..	..	..
19	++	..	..	50	48	..	..	..
21	+	..	..	52	54	..	..	..
25	..	..	3·400	56	49	8	..	..
28	++	..	..	..	..	..	..	..
Mar.								
4	+	March 2, P+E+	3·700	62	40	6	..	..
5	+	..	..	54	..	..	..	..
7	++	..	..	66	..	..	..	..
9	++	..	..	74	38	..	20+++	..
10	++	..	..	..	46	..	15*	..
11	+	..	4·000	70	44	26	7	..
12	+	..	3·500	58	40	19	5½	Neg.
13	+	..	..	..	45	..	4	..
14	±	..	..	56	53	..	3½	..
15	±	..	..	..	85	..	3½	..
16	St	..	3·400	58	113	12	..	Neg.
18	−	..	..	60	120	..	5	Neg.
19	−	..	..	64	98	..	9	±12P
20	+	..	..	..	..	..	..	..
21	+	..	..	..	87	..	11	+30–40P
22	+	..	4·000	72	71	13	..	..
23	++	..	..	66	64	..	9	..
25	+	..	..	..	66	..	15	±12P
28	+	..	..	..	70	..	12	..
30	St	April 1, P+	3·500	66	70	12	..	+
April								
5	..	P++	4·500	76	62	9	15++	++
6	..	..	..	..	..	..	15++	++
9	..	P++E+	..	72	82	..	15+	..
14	..	P++E+	3·960	68	45	8	..	..
25	+	P+E+	5·200	96	80	10	..	..
27	++	..	..	..	..	..	..	..
30	+	April 28, P++E+	3·200	54	43	10	..	..
May								
9	..	P+	3·900	70	54	10	..	..
12	..	..	4·700	88	66	7	..	..
27	..	..	4·500	84	59	4	..	..
June								
6	+	..	..	..	..	..	..	..
13	+	..	..	78	..	..	..	..
28	+	E+P+	..	..	..	..	..	..
July								
1	St	..	..	74	..	..	..	..
4	St	..	3·600	64	56	6	..	..
Aug.								
2	St	P+	4·700	82	83	8	..	..
25	St	..	..	94	56	..	10	+
Sept.								
20	St	..	..	88	66	..	11	+

Blood-transfusions each of 600 c.cm. of citrated blood of the same group as the patient were given on the following dates: Jan. 15, Feb. 18, March 2, 5, and 8, April 23, and May 10, 1938.
St = stopped. E and P = Ecchymoses and petechiæ.
* 4 hours after operation.

Intramuscular injections of progesterone 1 c.cm. had been given daily from Feb. 26 to March 5, but without effect. Further transfusions of 600 c.cm. of citrated blood were given on March 2, 5, and 8 to prepare the patient for operation. As can be seen from the table, the hæmoglobin was only raised from 62 per cent. to 74 per cent., and the platelet count remained low (40,000). The red-cell count remained between 3,500,000 and 4,000,000.

Operation and subsequent course.—Splenectomy was performed by Prof. G. Grey Turner on March 10, and a spleen somewhat larger than normal was easily removed. No splenunculus was seen at the operation. The histological report on the spleen was that it showed congestion and hyperplastic changes in the pulp with some fine fibrosis and an excess of leucocytes.

On the day after the operation the blood-count was: 4,000,000 red cells, hæmoglobin 70 per cent., 26,000 white cells, and 44,000 platelets; and the bleeding-time was only 7 min., though before operation it had been so prolonged that snake venom had been required to arrest bleeding which continued for twenty minutes after the skin puncture had been made.

The course of the case after operation is seen in the table, but a few important events may be mentioned. Six days after operation (March 16) the uterine bleeding, which had gradually lessened after operation, ceased altogether, and the tourniquet test became negative. The bleeding-time was only 3½ min. and, although the anæmia was greater (3,400,000 red cells, hæmoglobin 58 per cent., and 12,000 white cells), the platelets had risen to 120,000. It is evident from the table that the platelet count rose during the eight days following the operation from a preoperative level of 38,000 to 120,000 on March 18, after which it again fell.

The improvement in bleeding-time and capillary resistance preceded the improvement in the platelet count, and the tendency to bleed, as judged by these two tests, returned before the platelet count fell to its former level. It is also interesting to note that uterine bleeding (intermenstrual) began again ten days after operation (March 20) while the platelets were still 87,000, a much higher level than before operation and one well above the supposed "critical" level. The bleeding-time by this date had increased to 11 min.

On March 30 the uterine hæmorrhage stopped spontaneously, but fresh crops of petechiæ continued to appear. The patient was anæmic, with a platelet count of 45,000–82,000 and a bleeding-time of about 15 min. A further transfusion of 600 c.cm. of blood was given on April 23, and two days later profuse uterine bleeding began again, accompanied by fresh ecchymoses and crops of petechiæ. Punctures made for blood-counts would bleed four or five hours, and the patient had occasional small epistaxes.

Because of the severity of the loss of blood from the uterus, which reduced the blood-count to 3,200,000 red cells and the hæmoglobin to 54 per cent., hysterectomy was considered but was thought to be too dangerous. The hæmorrhage stopped again spontaneously on April 30, and a further transfusion on May 10 improved the blood-picture to 4,700,000 red cells, hæmoglobin 88 per cent., with 66,000 platelets.

On May 17 *radiotherapy* was started, for it was thought that the induction of an artificial menopause by this means was the safest way of controlling what threatened to be a dangerous loss of blood. The patient received 2000 r units to each of two fields on the anterior aspect of the abdomen, which is a depth dose to the uterus and ovaries of 1300 r.

The next menstrual flow occurred a week later than the patient expected it and lasted for ten days, the daily loss being about equal to that of a normal period. Its only effect on the blood-picture was to reduce the hæmoglobin from 84 per cent. to 78 per cent. Since the patient received radiotherapy there have been no fresh ecchymoses, and petechiæ have been fewer. The platelet count has remained unchanged in the region of 59,000–55,000.

A further menstrual period lasted four days from June 28 to July 1, with only a moderate loss. A blood-count after this showed 3,600,000 red cells, hæmoglobin 64 per cent., and 56,000 platelets. The blood-count has further improved since then, showing on Aug. 2 4,700,000 red cells, hæmoglobin 82 per cent., 8000 white cells, and 83,000 platelets; and at that date the patient was well, with no ecchymoses or bleeding, but with an occasional small crop of petechiæ. Up to the present she has remained well with a normal hæmoglobin and red-cell count. There has been no uterine blood loss since June. A few petechiæ appear from time to time and the platelet count is still low.

The *capillary-resistance tests* were performed by maintaining a pressure of 80 mm. Hg in the cuff of a sphygmomanometer for five minutes. The platelets were counted by the Lempert Kristenson technique.

SUMMARY

A case of thrombocytopenic purpura has been described in which the age at onset was 33 and the chief symptom an excessive menstrual loss of blood. Blood-transfusions had no effect in controlling the hæmorrhagic tendency, and the improvement following splenectomy was transitory. The severe uterine bleeding which endangered the patient's life was finally controlled by the X-ray induction of an artificial menopause.

After splenectomy there was no correlation between the level of the platelet count and the bleeding-time or capillary resistance, which suggests that in this patient thrombocytopenia was not the chief cause of the tendency to bleed.

Arrest of the uterine bleeding has been followed by an improvement in the anæmia and the appearance of fewer spontaneous ecchymoses and petechiæ.

We wish to make most grateful acknowledgment of the considerable help we have received from Dr. R. G. Macfarlane in investigating this case. The case-report is published by permission of the medical officer of health for the county of London.

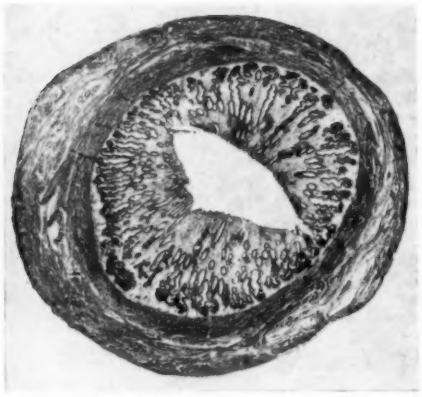
REFERENCES

Askanazy, M. (1930) *Sang.* **4**, 1.
Frank, E. (1915) *Berl. klin. Wschr.* **52**, 454.
Kaznelson, P. (1916) *Wien. klin. Wschr.* **29**, 1451.
Minot, G. R. (1917) *Arch. intern. Med.* **19**, 1062.
Spence, A. W. (1928) *Brit. J. Surg.* **15**, 466.
Whitby, L. E. H., and Britton, C. J. C. (1935) Disorders of the Blood, London and Philadelphia, p. 264.

FURTHER OBSERVATIONS ON THE SIMILARITY OF STILBŒSTROL AND NATURAL ŒSTROGENIC AGENTS

BY A. PALMER, M.D. Oregon
ROCKEFELLER RESEARCH FELLOW; AND
S. ZUCKERMAN, D.Sc. Lond., M.R.C.S.
(*From the Department of Human Anatomy, Oxford*)

DIETHYL-STILBŒSTROL, a synthetic di-phenol, has the following properties common to œstrogens: (1) injected into ovariectomised rats and mice it produces œstrus (Dodds, Golberg, et al. 1938, Emmens 1939); (2) it causes growth of the endometrium in rats and rabbits (Dodds, Lawson, and Noble 1938, Kreitmair and Sieckmann 1939) and in monkeys (Bishop et al. 1939), and in the latter animals it activates the sexual skin; (3) it causes changes in the feathers of capons and in the teats of guineapigs (Dodds, Lawson, and Noble 1938, Kreitmair and Sieckmann 1939); (4) it can be used instead of natural



Photomicrograph of transverse section of uterus of a spayed rhesus monkey on the 29th day of an "artificial cycle" produced by a 14-day course of stilbœstrol followed immediately by a 14-day course of stilbœstrol and progesterone. (× 4.)

œstrogens in the treatment of symptoms resulting from hypofunction of the ovaries either at the menopause or at other times (Bishop et al. 1939, Winterton and MacGregor 1939, Loeser 1939); (5) it can interrupt early pregnancy in rabbits (Parkes et al. 1938); and (6) it appears to inhibit the gonadotropic activity of the anterior pituitary of the rat (Noble 1938a and b). Stilbœstrol differs from the natural œstrogens in that it is much more active by mouth, and that when injected, although (like the natural œstrogens) it inhibits the effects of injected androgenic hormone on the comb of capons, it has (unlike the natural œstrogens) no inhibiting effect on comb-growth when it is administered by inunction (Mühlbock 1939). In view of this difference we have investigated the properties of stilbœstrol further in the following three ways.

(1) *The sensitisation of the endometrium to allow of progestational differentiation.*—The hormone of the corpus luteum (progesterone) has practically no effect on the endometrium unless this has been previously acted on by œstrogenic hormone. An experiment carried out on a spayed rhesus monkey shows that, in this respect, stilbœstrol behaves like natural œstrogens. Corresponding observations on rabbits have been reported by Dodds, Lawson, and Noble (1938) and by de Fremery and Geerling (1938).

The monkey was injected daily for fourteen days with increasing doses of stilbœstrol, a total of 2·7 mg. being administered. Beginning on the fifteenth day 2·5 mg. of progesterone was administered daily for fourteen days, 5 μg. of stilbœstrol being injected each day during the period of progesterone treatment. The figure, a photomicrograph of a transverse section of the uterus of the monkey, shows a fully developed progestational (premenstrual) endometrium, which in no way differs from the type of endometrium produced in such experiments when œstrone is used.

(2) *Intravaginal application of stilbœstrol.*—Pellets of cotton-wool which had absorbed 0·05–2·5 μg. of stilbœstrol in 0·1 c.cm. of oil were introduced into the vaginas of twenty spayed mice. Œstrone 0·05–0·25 μg. was administered in the same way to ten other mice. As a further control, pellets of cotton-wool soaked in oil alone were placed in the vaginas of five other mice, while five mice were left untouched. No œstrous vaginal changes were observed in the latter two groups of animals, but they were present in the majority of mice of the former two groups which had retained the pellets for twenty-four hours.

(3) *Percutaneous absorption of stilbœstrol.*—Proœstrous and œstrous vaginal changes were observed in half of a group of ten spayed mice whose necks had been painted with 0·1 c.cm. of oil containing 1 μg. of stilbœstrol.

REFERENCES

Bishop, P. M. F., Boycott, M., and Zuckerman, S. (1939) *Lancet*, **1**, 5.
Dodds, E. C., Golberg, L., Lawson, W., and Robinson, R. (1938) *Nature, Lond.* **141**, 247.
— Lawson, W., and Noble, R. L. (1938) *Lancet*, **1**, 1389.
Emmens, C. W. (1939) *J. Physiol.* **94**, 23P.
de Fremery, P., and Geerling, M. C. (1938) *Acta brev. neerl. Physiol.* **8**.
Kreitmair, H., and Sieckmann, W. (1939) *Klin. Wschr.* **18**, 156.
Loeser, A. A. (1939) *Brit. med. J.* **1**, 13.
Mühlbock, O. (1939) *Nature, Lond.* **143**, 160.
Noble, R. L. (1938a) *Lancet*, **2**, 192.
— (1938b) *J. Physiol.* **94**, 177.
Parkes, A. S., Dodds, E. C., and Noble, R. L. (1938) *Brit. med. J.* **2**, 557.
Winterton, W. R., and MacGregor, T. N. (1939) *Ibid*, **1**, 10.

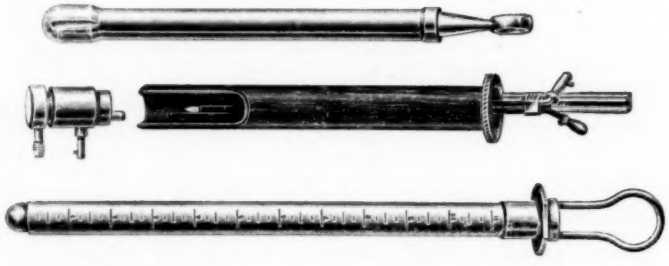
NEW INVENTIONS

NEW DIATHERMY SIGMOIDOSCOPE

THE difficulty of treating non-malignant growths high up in the rectum is well known, but with the technical assistance of Messrs. Vann Bros. I have designed a new sigmoidoscope through which diathermy can easily be carried out in these conditions, and also in those carcinomatous cases where radical operation is not feasible. The instrument should be especially suitable for snaring a polypoid growth and subsequently applying diathermy to its base, but this has not yet been tried.

The instrument consists of a tube made of non-conducting material, with a longitudinal slot 3 in. long widening slightly towards its distal end (see figure). Along the tube, on the side away from the slot, runs a fully insulated lamp and a suction tube, the latter projecting about ¾ in. beyond the former. The position of these may be adjusted by sliding them backwards or forwards in the special holder fitted to the proximal end of the apparatus; this ensures that the lamp and suction tube are always in close contact with the wall of the sigmoidoscope.

Before introducing the sigmoidoscope the lamp and suction tube are removed and an obturator is inserted.



Above: The obturator.
Middle: The insulated tube with light and sucker attachment; the eyepiece with attachment for blower.
Below: The examination tube.

The instrument is then passed into the rectum, the obturator is removed, and a light and inflation device are attached. By distending the rectum with air in the ordinary way the instrument is introduced as far as the growth, and then by turning the sigmoidoscope round the growth is made to project into the slot. The inflation device is then removed. As the air escapes only the part of the rectum to which the growth is attached prolapses into the tube. When the lamp and suction tube are then introduced, an excellent view of the neoplasm is obtained, and diathermy with a long electrode can readily be carried out under direct vision. The suction tube, by projecting just beyond the growth, sucks the smoke away from the field of operation.

For the sake of completeness a graduated metal examination tube is supplied. The instrument is made by Messrs. Vann Bros., of 63, Weymouth Street, London, W.1.

STANLEY O. AYLETT, M.B. Lond., F.R.C.S.
King's College Hospital, S.E.5.

REVIEWS AND NOTICES OF BOOKS

A Glasgow Manual of Obstetrics

(3rd ed.) By SAMUEL J. CAMERON, M.B., F.R.F.P.S.G., F.R.C.O.G., regius professor of midwifery, University of Glasgow; JOHN HEWITT, M.B., F.R.C.O.G., hon. lecturer in clinical gynæcology in the university; ROBERT A. LENNIE, M.D., F.R.F.P.S.G., F.R.C.O.G., obstetric surgeon to the Royal Maternity Hospital, Glasgow; and ELLEN D. MORTON, M.B., M.R.C.O.G., Hall tutor in obstetrics in the university. London: Edward Arnold and Co. 1939. Pp. 679. 21*s*.

THE first section of this deservedly popular book, which is concerned with anatomy and physiology, contains an unusually clear account of what we know of the factors governing the processes of menstruation and the embedding of the fertilised ovum. The physiology and diagnosis of pregnancy is systematically outlined, but only four pages are allotted to antenatal care. This is a mistake, because the student is seldom keenly interested in the expectant mother and must be taught from the outset to regard her supervision as an essential part of obstetrical service; much more emphasis should be given to this part of his work than is possible in such small space. On the other hand, the section on the mechanism of labour loses nothing by its brevity. The Glasgow treatment of the toxæmic states is given in some detail. The incidence of toxic vomiting seems to be much greater than in London, and termination of the pregnancy is advised under certain well-defined conditions. The account of the treatment of a pregnant patient suffering from pyelitis is full and excellent. Cæsarean section is advised for placenta prævia when the placenta covers the internal os and the condition of the patient is satisfactory; otherwise the vagina is plugged before other measures are taken to effect delivery. Trial labour is allowed when minor degrees of disproportion are suspected. The chapter on the ætiology and treatment of puerperal sepsis is particularly able and contains useful notes on air-borne infection. Accounts of obstetric surgery and of radiology in obstetrics conclude an excellent textbook, well printed and illustrated.

Morphology of the Brachial Plexus

By WILFRED HARRIS, M.D., F.R.C.P., consulting physician, St. Mary's Hospital; physician, Maida Vale Hospital for Nervous Diseases. London: Humphrey Milford, Oxford University Press. 1939. Pp. 117. 25*s*.

MORE than 20 years ago Wilfred Harris gave the Arris and Gale lectures at the Royal College of Surgeons on the morphology of the brachial plexus and more than one member of the audience looked forward eagerly to their publication, that the matter might be studied at leisure and the results made available to students. It was a striving for perfection that prevented their issue at the time of their delivery; now, after a very long interval, we welcome the completion of work which is what it claims to be, a study in morphology. Moreover, it is a study in morphology carried out in order to shed light on human structure and function and thereby to assist the medical man in arriving at a proper understanding of the clinical conditions manifested in his patients. Had the work been published in 1918, its object would not have called for remark, for at and before that time many papers were appearing in English journals that had this as their avowed purpose. In the interval there has been a considerable neglect of what has been described as "mere anatomy" by the professional anatomists in England. Contributions from them with a medical bearing, such as Prof. Stibbe's article on another page, are now all too rare. It has been left to a busy consulting physician to find the time and collect the material necessary for completing this exhaustive comparative examination of the brachial plexus in the vertebrates. From the vast amount of positive information thus gained, he has resolved many of the outstanding problems of nerve distribution and has thrown new light on those which cannot be explained by scalpel and forceps alone. For example, his explanation of the apparently anomalous dorsal cutaneous supply by the ulnar and median nerves in man and of the morphology of the pectoralis major muscle are noteworthy contributions to the literature of anatomy. All this has been done very clearly in a volume of some 100 pages illustrated by more than 80 simple but eminently satisfactory drawings. The volume provides an admirable guide for the clinical neurologist and an essential handbook for the comparative anatomist. To the medical student and to the human anatomist we commend it heartily: to the first as a help in his understanding of the human brachial plexus and its branches, and to the second as an example, and, we hope, a stimulus.

The Surgery of Pain

By RENÉ LERICHE, M.D. Lyon, F.R.C.S. Eng. (hon. causa), professor of clinical surgery, University of Strasbourg. Translated and edited by ARCHIBALD YOUNG, B.Sc., M.B., regius professor of surgery, University of Glasgow. London: Baillière, Tindall and Cox. 1939. Pp. 512. 21*s*.

THOSE who have read this work in the original will be struck at once by the more handsome appearance of the present volume and by the excellence of Prof. Young's translation which reproduces the racy, conversational style of the lecturer—for the book

is a reproduction of a series of lectures delivered in Paris at the Collège de France.

It is greatly to the credit of Prof. Leriche that he has stimulated other surgeons to take an interest in the relief of intractable pain, and this book serves to show both how much he has done already and how much still remains to be done before we can arrive at a proper understanding of the mechanisms which underlie many of these special forms of pain. Chapters are devoted to trigeminal neuralgia, post-traumatic neuralgia, nerve injuries in general and causalgia in particular, and the pains of amputation stumps. Many of these pains are associated with vasomotor phenomena, and in the special sections dealing with vasoconstriction, Reynaud's disease, and juvenile arteritis including arterial obliteration, the author develops his argument that there is some close association between pain, vasomotor phenomena, and the nervous control of the blood-vessels through the sympathetic nervous system. Just what that association may be it is impossible to discover from reading this book, for Leriche himself confesses that he does not understand it, and the student of the accepted teachings of human physiology will find his explanations unconvincing. Over and over again one feels that the observations have been correctly made and wrongly interpreted; yet there can be no doubt of the importance of recording the success of certain operations for the relief of pain.

The final chapters on angina pectoris, visceral pain and the palliation of inoperable malignant disease in the pelvis serve to indicate the value of anæsthetising the sympathetic trunks as a test for selecting the cases suitable for sympathectomy. Every thoughtful surgeon should dip into this book to find out how much may be achieved in the relief of many forms of pain which have not previously been regarded as amenable to surgical treatment.

Recent Advances in Forensic Medicine

(2nd ed.) By SYDNEY SMITH, M.D., F.R.C.P., regius professor of forensic medicine, University of Edinburgh; and JOHN GLAISTER, M.D., D.Sc., J.P., regius professor of forensic medicine, University of Glasgow. London: J. and A. Churchill. 1939. Pp. 264. 15*s*.

FORENSIC medicine has kept itself well abreast of the rapid advances in scientific method, and Sydney Smith and Glaister provide here a discerning summary of its progress. Almost the entire text has been revised, and a vast amount of new information has been admitted without appreciably altering the size of the book. The largest section is still that which deals with ballistics. It occupies an undue proportion—nearly a third—of the text, and might well be shorn of its elementary opening chapter, since this book is not designed for the tiro. This is however our only criticism. The sections which follow are confined to matter which will appeal to experts (though not to them alone) and provide a mine of information: that on hairs now supplies a complete atlas of the subject and includes for the first time an article on cuticular structure. After chapters on the precipitin tests and a classical summary on individuality of the blood there remain only some 60 pages, into which are compressed a review of the advances in estimation of CO in blood and notes on forensic spectrography, on the use of ultraviolet and infra-red light and on alcohol, with an appendix on Walker's impression method of obtaining a record of powder marks around a firearm wound. There is also a section on larval infestation, the medicolegal aspects of which were established in the Ruxton case.

The tone of this book is authoritative and reserved. So much care has been spent on its revision that this second edition must, of necessity, be acquired by those who prized the first edition. The book is an essential complement to the shelves of anyone interested in forensic science.

Chemistry of the Proteins

(2nd ed.) By DOROTHY JORDAN LLOYD, M.A. Camb., D.Sc. Lond., F.I.C., director of the British Leather Manufacturers' Research Association; and AGNES SHORE, B.Sc., A.I.C., demonstrator in the physiology department, London School of Medicine for Women. London: J. and A. Churchill 1938. Pp. 532. 21*s*.

ADMIRERS of Dr. Jordan Lloyd's well-known book will not be disappointed with this new edition. The applications of protein chemistry to industry have now been left out, but this has made the book a more homogeneous treatise of the constitutional and physical chemistry of the proteins and amino-acids. There have been such advances since the publication of the first edition that a surprising proportion of the references are to work done in the last ten years. Perhaps the most outstanding advances have been the discovery of two new amino-acids (threonine and citrulline); the researches of Bergmann and his colleagues, using synthetic substrates for the proteases, leading to a better understanding both of those enzymes and also of the structure of the proteins; and the study of the protein molecule using X rays (Astbury) and the ultra-centrifuge (Svedberg). Although this edition has clearly been prepared with great care, we must protest against the use of the word "solublising" (p. 412).

The Wheel of Health

By G. T. WRENCH, M.D. Lond. London: The C. W. Daniel Company. 1938. Pp. 146. 6*s*.

As a medical student Dr. Wrench was obsessed by the idea of studying the health of the healthiest people. He has had no chance of doing this for himself, but in this book he makes good use of McCarrison's observations on the Hunza, a small tribe living in a cleft between the Hindu-Kush and Kara-Korum ranges. These people, who claim to be descended from the soldiers of Alexander the Great, are of fine physique and great endurance. Since the government of India suppressed brigandage they have confined themselves to their main industry of agriculture, cultivating small terrace fields, fertilised by compost which includes their excreta and all other waste from their operations.

Dr. Wrench attributes the health of the Hunza to the "wholeness" of their diet—chappaties of wholemeal wheat flour, fresh butter, sprouted pulse, fresh raw vegetables, meat (when obtainable) with skin and bone, and much fruit, with soured milk and fresh home-made wine. All who have studied dietetics or agriculture will agree with many of the views he sets forth, but many who are convinced of the value of accessory food factors, known or unknown, will be disinclined to carry the principle of wholeness to its fullest lengths; and similarly not all who recognise the need of additional humus in many of our soils would care to run the risks which the widespread use of compost from human excreta might involve.

THE LANCET

LONDON: SATURDAY, APRIL 22, 1939

BLOOD AND VULCANITE

"The anthropologist of the future, when investigating the remains of the inhabitants of Britain in the first half of the twentieth century, will undoubtedly comment on the large number of young adult skeletons with no teeth."[1] No statistics of toothlessness are available, but doctors and dentists in all but the most well-to-do practices will support this prophecy. Who is to blame for these wholesale extractions? Too often, particularly in the industrial areas, the condition of the teeth of working-class people in the early twenties is such that extraction is the only possible treatment. Apart from the debatable influence of diet and environment, these teeth are being lost because they are inadequately attended to at school and completely neglected in the immediate post-school years. The staffing of the school dental service is insufficient—and in some places grossly insufficient—to carry out the necessary conservative work on permanent teeth; and, more important, a large proportion of parents, often as many as 60 per cent. in schools where the teachers' persuasive powers are poor, refuse to have fillings done. On leaving school, at an age when dental caries is particularly prevalent, the working-class adolescent is left for several years without provision for dental treatment, and later he only qualifies for benefit if his approved society has a disposable surplus and he is able to pay half the cost.

Many extractions are unavoidable under the present system, but many others are unnecessary and unjustifiable. On another page Mr. L. G. ROBINSON lays some of the blame for these at the door of the medical practitioner. With no real knowledge of dentistry, he says, doctors send their patients to the dentist with a demand for extractions, and unless he is a hospital consultant the dentist can hardly refuse to comply with such orders, backed as they invariably are by the patients themselves. Very many doctors overestimate the importance of dental sepsis as a cause of general disease: faced with a condition such as chronic rheumatism, which may have a septic origin, they are too ready to convict obvious dental sepsis as the cause, at any rate until its removal has proved them wrong. Secondly, they are apt to underestimate the seriousness of extractions: the removal of many teeth, especially if done at one sitting, is far from being a trivial operation, and may activate a smouldering infection and be the stepping-stone from poor health to invalidism; or the toothlessness of subsequent months may precipitate a gastric or duodenal ulcer. Further, many doctors have an exaggerated faith in dental prosthesis; no artificial teeth are as efficient as natural ones, and though most people can be made reasonably comfortable, many with unduly sensitive gums or abnormal alveolar arches can never masticate properly with a denture. There can be no doubt, however, that ruthless extraction is encouraged by the less scrupulous members of the dental profession. The removal of all teeth and the provision of complete dentures is the easiest and quickest way of making money where fees are low. Many of the unqualified dentists to whom the Dentists Act of 1921 gave a legal standing were never trained in conservative methods, and their livelihood depends on the teeth they condemn. The approved societies encourage these blood-and-vulcanite practitioners by their low scale of fees, their objection to partial dentures and fillings (often admittedly with reason), and their rules that allow only one anæsthetic fee.

Doctor, dentist, and approved society thus all play their part in providing data for the future anthropologist, but fundamentally the attitude of the public themselves is to blame for the loss of countless teeth that might be saved. Even where almost gratuitous treatment is available many parents and adult patients will not spare the extra time and trouble for fillings, but prefer to wait until extraction is inevitable. A large section of the community, moreover, have come to regard it as almost natural to have their teeth out at an early age. Until this attitude changes it will be of little use for the school dental service to be reinforced, for treatment to be provided for adolescents, or for the approved societies to extend their benefits. Much can be done to educate the public in schools and welfare centres, but even more by the medical practitioner; he must ensure that in this his powerful influence is exerted on the right side.

1. Cole, L. B., Dietetics in General Practice, London, 1938, p. 17.

CHEMOTHERAPY IN CEREBROSPINAL FEVER

THOSE whose daily work is facilitated by expert nursing and lavish equipment may well feel inclined to raise their hats to the three officers in the Sudan Medical Service whose experiences in the treatment of cerebrospinal fever are described elsewhere in this issue. The word "primitive" seems inadequate to describe the conditions under which their work had to be done, and the expression "field conditions" takes on a new and more literal meaning when the operation of lumbar puncture has to be performed on patients lying on the ground. The only attentions the sick received, apart from the specific treatment with which these papers deal, were those provided by relatives. The treatment itself was primitive in the sense that tablets of sulphonamide compounds are unsuitable for preparing solutions for injection: some of these fluids were necessarily not solutions at all, but suspensions, which even tended to block the needle with which they were injected. In spite of these grave disadvantages, the treatment appears to have been an almost miraculous success. Patients walked home only a few days after it was begun, and local "'medicine men' forsook their

own lucrative practices and used their authority in encouraging patients to come . . .": an acknowledgment of the help afforded by these gentlemen is a most unusual postscript to a scientific paper.

These simple facts, and the account given of the rapid clinical effect achieved, are eloquent testimony to the efficacy of the treatment. The mortality-rates of only 10 and 5 per cent. in two large series of treated cases are also strikingly different from that which is apparently normal for this disease in the Sudan. These papers, however, do not depend on figures for their interest and value, and the statistical purist would perhaps look askance at them. The impression they may possibly give needs to be corrected in some other directions which are more important. Meningococcal meningitis, despite its high mortality in the Sudanese, may well be more amenable to treatment in these people than in Europeans: if so, it does not follow that similarly rapid effects are everywhere to be expected, or that equally small doses will always suffice. In the second place there is no evidence here of the superiority of any one sulphonamide compound over another for the treatment of this disease. Dr. SOMERS used M. & B. 693 only; Drs. BRYANT and FAIRMAN used this for most of their cases, and sulphanilamide for the much smaller number which their limited stock of this drug enabled them to treat; and for what the fact is worth the recovery-rate on both drugs was 95 per cent. Therapeutic studies, if they are to have evidential value, must involve one of three kinds of comparison—supposedly specific treatment with merely symptomatic treatment; one specific treatment with another; or, thirdly, two forms of the same specific treatment, one with another. Only the last of these now seems justified in connexion with meningococcal meningitis, and it is to be hoped that future opportunities in the Sudan will be used to make a serious comparison between the merits of sulphanilamide and M. & B. 693. While all in this country will sympathise with those who have to contend with such appalling conditions, they will also envy such abundance of clinical material. Paradoxical as it may sound, the circumstances of the Sudan seem ideal for a therapeutic study adequate in scale if rather rough in method.

A MICRO-ORGANISM FROM RHEUMATISM

SWIFT and BROWN[1] of New York report some interesting observations on fluid from the joints and pleural cavities of patients with acute rheumatism. They noted first that such fluid, inoculated on the chorio-allantoic membranes of developing hen's eggs, gave rise to characteristic lesions; these did not appear on primary inoculation, but by the third to the fifth passage they had usually become definite and could then be induced with regularity. On microscopical examination these "pearl-like" lesions were seen to be globular structures surrounded by flattened ectodermal cells and containing eosinophil material in their centre; they appeared to arise in the ectoderm. Judging from this description they are unlike virus lesions, and although the agent producing them passes through Berkefeld V. and N. filter candles the fact that it can be cultivated in ox-serum dextrose broth or on solid media rich in serum also marks it off from the viruses. It evidently belongs to the pleuropneumonia group. SWIFT and BROWN found that mice anæsthetised with ether and inoculated intranasally with rheumatic exudates or with suspensions of the infected egg-membranes developed pneumonia, and that this infection could be passed serially in mice. Both from the pneumonic lesions in mice and from the lesions on egg-membranes a similar micro-organism was grown.

Recent work has shown that pleuropneumonia-like organisms are to be found in some stocks of mice, so the possibility that the micro-organism of SWIFT and BROWN came from the inoculated mice and not from the rheumatic material had to be faced. The possibility was rendered remote by its isolation from chorio-allantoic membranes infected directly with rheumatic exudates, and it was altogether removed by obtaining positive cultures in ox-serum broth directly from rheumatic material. This was achieved with the arthritic exudate from one case and with an excised erythema-nodosum nodule from another, and the cultures thus made were found to have the same pathogenicity for animals as the strains recovered by direct inoculation of mice or of egg-membrane.

There seems to be no doubt then that this pleuropneumonia-like organism was derived from patients with rheumatic fever, and the question of its ætiological significance now arises. Micro-organisms of the pleuropneumonia group have been found in a variety of situations, and the isolation of such an agent from rheumatic exudates by no means implies that it is the prime cause of acute rheumatism. In this connexion, however, some findings of A. B. SABIN[2] are pertinent; for he has isolated a pleuropneumonia-like organism from mice which on intravenous or intraperitoneal injection regularly produced in this species of animal a migratory arthritis. The arthritis became progressive and chronic in one or more joints, leading ultimately to ankylosis, and fusiform swelling of isolated digits was often observed. Furthermore the pathological changes, which were limited to the joints, consisted in proliferative changes in the synovial membrane, in the capsule, and in the perichondrium of the articular cartilage. As SABIN points out, this clinical and pathological picture in mice closely resembles rheumatoid arthritis in man, and he recommends search for a similar organism in case of human arthritis of unknown cause. SWIFT and BROWN's observations in acute rheumatism lend additional weight to this suggestion.

1. Swift, H. F., and Brown, T. McP., *Science*, March 24, 1939, p. 271.

2. Sabin, A. B., *Ibid*, March 10, 1939, p. 228.

THE Norwegian Medical Society in Oslo has elected Prof. Grey Turner a foreign member.

ANNOTATIONS

THE SAVING OF SIGHT

AMONG the causes of blindness foremost places were at one time occupied by infections such as smallpox, measles, and scarlet fever, as well as ophthalmia neonatorum. In some parts of the world this still holds, but in civilised countries improved social conditions led to the almost complete disappearance of the acute fevers from the list by the end of the nineteenth century, leaving ophthalmia neonatorum as the principal infective cause. With further vigilance this disease is now vanishing in its turn, to such an extent that there are not enough blind children to fill our blind schools. The chief preventable causes remaining for control are progressive myopia, corneal ulcers and accidents, of which the most important is myopia.

The various measures taken for the control of myopia in Europe and the United States form the subject of the second number of the *Journal of Social Ophthalmology*, which was reviewed in our issue of March 25. The exact degree of myopia that may progress to loss of sight is as yet impossible to determine, and the extent to which conditions in schools aggravate the defect is also still uncertain. The need for preventive action seems not to have been realised until ophthalmic surgeons pointed out that many children in schools for the blind were merely poorly sighted. Such observations by Bishop Harman in England in 1905 led to the establishment of the first "myope class" or "sight-saving class" in London in 1908. A similar class was started in Strasbourg in 1911 and in Boston in 1913, but the development of this movement has been very different in different countries. Opinion is divided as to whether the sight-saving classes should be situated in blind schools, in ordinary schools, or in special schools of their own. Although at Hamburg, Chemnitz and a few other places partially sighted children are still educated in classes attached to blind institutes, this method is now generally condemned because of the possible stigma attached to a blind school and on the ground that a child has the best chance of living a normal life if he is brought up with normal children. In Germany the aim is to rescue the children with very advanced myopia from the blind schools and this is done by the provision of some 8 special schools; but a practical nation will not waste much money on such defective material. In the United States nothing is too good for the partially sighted children and in twenty years 571 sight-saving classes have been established and lavishly equipped, admitting children with refractive errors however mild if likely to be benefited. In England the position is midway between these extremes. Here there are 57 sight-saving classes attached to ordinary schools, but in 1934 a Government committee reported that of a total of 6000 poorly sighted children barely a third were receiving the benefit of the special teaching best adapted to their needs.

One of the principal difficulties of myope classes in ordinary schools is the range of age of the children; another is the expense of teachers with special experience, equipment, including books with suitable type, and facilities for practical training. According to Prof. Bartels, who reviews the subject in the *Journal of Social Ophthalmology*, the respective costs of educating a child in an ordinary elementary school, in a sight-saving school and in a blind institution, are RM.130, RM.280 and RM.1700 a year, but the cost of special classes is difficult to assess. Appropriate occupation after leaving school is as important as suitable training, but the list of possible trades and professions given by Bartels suggests that there is no lack of scope for the well-trained ex-pupil. While adequate sight-saving classes or schools should clearly form part of any modern educational system, Bishop Harman reminds educators that every school should be a sight-saving school; if it is not, it falls short of the proper standard of a school.

THE KIDNEYS AND EXERCISE

THE kidney is peculiarly sensitive to oxygen deficiency, with results that are likely to attract attention—oliguria and even anuria, or the passage of albumin, blood and casts in the urine. For long the risk of serious renal damage was advanced as an indictment of strenuous exercise, and this view went almost uncontested until William Collier [1] of Oxford first detached physiological or adolescent albuminuria from the other albuminurias, and showed that while urinary abnormalities were by no means unusual in athletes they were but transitory and not evidence of permanent renal impairment. In the course of a correspondence in the *British Medical Journal* [2] in 1926 Collier reported that he had observed albuminuria in every member of a university eight after they had rowed a course, and L. R. Lempriere of Haileybury had found it in almost every schoolboy after even comparatively trivial exercise. Adolphe Abrahams, on the other hand, whose investigations were confined to older track athletes, had rarely seen albuminuria except in minute quantity even after the most strenuous effort. Abrahams suggested that the deviation in his results from those of Collier and Lempriere was explainable by the difference in age. The younger subjects possess a relatively unstable vasomotor system and a more sensitive renal epithelium, both of which adjust themselves in the course of time, except in those who show persistent adolescent albuminuria, and in this respect never "grow up."

A recent research by Foster [3] was carried out on 18 trained men taking part in the Mount Washington run. This entails a continuous ascent of eight miles, comprising a rise of 4800 ft., and takes the competitors about two hours. The urine of these men was examined half an hour before starting the run and immediately after its completion. Of the specimens examined before the effort, 4 showed the slightest trace of albumin and 14 showed more; 10 gave a reaction to Benedict's solution; 7 showed occasional fine granular casts; and 15 had crystals of calcium oxalate. Of the post-exercise specimens, 3 showed a trace of albumin, 1 a slight trace, 11 the slightest trace, and 3 none at all; 13 gave a positive reaction to Benedict's solution; 4 showed many red blood-cells, 3 a few, 3 an occasional cell, and 8 none at all; and casts were present in 13 and calcium oxalate crystals in 10. Although the sugar in the urines passed before the race was explainable through emotional influence, the increased incidence as a consequence of the run suggests a transitory effect on the pancreas and liver. No mention is made of further observations after an interval, but the fewer but more protracted investigations of British observers suggest that all the abnormalities would have

1. Collier, W., *Trans. med. Soc. Lond.* 1907, **30**, 75.
2. Collier, *Brit. med. J.* 1926, **1**, 640 et seq.
3. Foster, A. S., *J. Amer. med. Ass.* March 11, 1939, p. 891.

disappeared within 24 hours. It seems that while no organ with the exception of the heart is more essential to health, and no organ suffers more punishment throughout life, the kidney is protected from damage by its capacity for resuscitation and regeneration, and the destruction of tissue which may be caused by an extreme strain imposed on its circulation is ephemeral and is rapidly and completely restored.

CHANGES IN AGE-INCIDENCE OF DIPHTHERIA

THE decline in mortality from diphtheria during the years of the present century has not, as the Registrar-General's statistics show, been uniform at each age. Although the death-rate is still greatest in the first five years of life it has decreased more rapidly at these ages than in the early years of school life. In consequence there has been a relative shift in the age-distribution, with the result that the disease is more concentrated now than formerly upon children of school age. In a careful statistical study 3 members of the Medical Research Council's statistical staff,[1] working in the division of epidemiology and vital statistics of the London School of Hygiene and Tropical Medicine, conclude that this change may be the result of the decline in fertility with, in consequence, a smaller size of family in most sections of the community. In addition to the available mortality data they have used records of notifications at ages for the metropolitan boroughs of London, specially extracted from unpublished records in the hands of the L.C.C. The age-shift in mortality has occurred, they find, mainly in the poorer districts of London, and the attack-rate at school ages has also increased most amongst children in the lowest social group. The explanation, they suggest, is that with a smaller size of family there is less chance of the pre-school child acquiring partial or complete immunity. Accordingly it reaches school still susceptible to infection. The vital-statistical experience of children living in residential districts supports this hypothesis. Their attack-rates from infectious diseases at ages 5–9 are usually higher than those of similar children in the lower social classes, whereas the converse is true for the pre-school population. As the size of family in the lower social classes declines, and environmental conditions improve, their children approximate more closely to those of the more socially fortunate group as regards liability to infection and age of attack. Proportionately more of them will reach school age without previous attack or acquirement of latent immunity. Of the two factors with which the authors are concerned, improving environment and decline in the average size of family, the latter, their statistics indicate, is the more important.

UREA AND MERCURIAL DIURESIS

FROM time to time patients with congestive cardiac failure are met with in whom, notwithstanding efficient digitalisation, it is impossible to produce a satisfactory diuresis, and the œdema remains or increases. A year ago Simonovits [2] described such a case in which a first dose of 2 c.cm. of the mercurial diuretic Novurit produced a diuresis of 3·1 litres, but the patient responded hardly at all to subsequent doses up to 4 c.cm., even with large quantities of ammonium chloride, and the œdema continued to increase. On the other hand the administration of 40 g. of urea followed by 4 c.cm. of novurit produced a satisfactory diuresis of 3·6 litres. Control experiments on this patient showed that the effect of novurit and urea together was greater than the sum of their separate effects. In a further paper Simonovits [3] extends these observations to 15 patients with cardiac dropsy and 2 with cirrhosis of the liver. In some of these there was a satisfactory diuresis after the first dose of novurit alone, but subsequent doses had little effect; in others there was little difference between the actions of the first and subsequent doses; but in all the diuresis and loss of weight were significantly greater after urea and novurit given together than after novurit and ammonium chloride. One dose of urea seems to increase the diuretic effect of repeated injection of novurit for several days. Simonovits advises 50 g. of urea taken in 300 c.cm. of fluid in the early morning, but not on an empty stomach, and drunk slowly. The mercurial is then injected at once, usually intravenously. The vehicles suggested for the urea are rum and tea or raspberry vinegar, but no doubt something more to the English taste could be devised.

THE ART AND THE SCIENCE

IN the first number of *Oxford Science*—may it live long and provocatively—"Peter Shaw" touched with the sharp end of his spear a number of imposing shields. In the second number, issued in February, Prof. L. J. Witts has taken up one of these challenges, perhaps with a touch of the Templar's disdain. "Peter Shaw" held that researchers should be caught early, but Prof. Witts thinks that this cannot be done at the undergraduate stage, although he is "quite certain that research workers are born and not made." Things are never quite what they seem. The reader whose knowledge of Oxford is derived from books and imagines that all real Oxford men (unlike Cambridge men, according to J. S. Mill) are practised dialecticians, may wonder why "Peter Shaw" did not at once invite Prof. Witts to define the stage of mental growth at which one can diagnose the born researcher. It would indeed be an interesting topic for a thesis (perhaps of an American candidate for the degree of Ph.D.) to try to unravel the criteria for choosing whole-time professors of clinical subjects. What proportion of appointees are promoted from junior whole-time posts? How many pass direct from private professional practice to the professorial chair? When we had such data, we might be able to answer a number of other important questions. In his original article, "Peter Shaw" distinguished between art and science in medicine. All, or nearly all, dichotomies are objectionable. A great practical physician or surgeon is both artist and scientist; a great research worker is scientist and artist. But we do all feel instinctively that in the practitioner the artist and in the investigator the scientist predominates. We also feel instinctively that the psychological make-up of the artist is different from that of the scientist. To say that the clinical artist is more sympathetic to human beings and their sorrows, the scientist more inquisitive, is an overstatement, but suggests the difference. William Charles Wells was a better scientist than Peter Mere Latham, but an inferior artist; most of us (having read what Munk says of both) would feel that a sick man would prefer to be treated by Latham rather than by Wells. Without having too much faith in psychological tests we might believe that the

1. Cheeseman, E. A., Martin, W. J., and Russell, W. T., *J. Hyg., Camb.* March, 1939, p. 181.
2. Simonovits, I., *Bp. orv. Ujs.* 1938, 36.
3. Simonovits, *Orv. Hetil.* 1938, 82.

Wellses and the Lathams could be differentiated in quite early manhood. But, and this is the crux of the matter, a William Charles Wells of 1939 has perhaps a better prospect of satisfying his innate curiosity, his desire to find things out, and of enjoying a reasonable share of the pleasant imponderabilia of life, if he devotes himself to research which is not distinctively clinical. It is, after all, a question of time. The art *is* long, and if our clinical researcher must prove himself artist as well as scientist before his scientific claims will be considered, still more if he must compete for desirable appointments against those who are primarily artists—it cannot be surprising if clinical research has few votaries. It must be remembered however that physicians with a bent for investigation used to be forced into practice, since there were hardly any paid clinical posts available. Now that studentships and fellowships are provided for the express purpose of training men in clinical research, those who have used them to good advantage are likely to be accepted as strong candidates for the higher appointments in the future.

THE BLOOD-FLOW THROUGH MUSCLE

WITH increased knowledge of the value of sympathectomy in the treatment of peripheral vascular disease it is recognised that while such procedures may benefit ulceration of the extremities they rarely relieve the symptom of intermittent claudication. Removal of the vasoconstrictor fibres seems to have more effect when the brunt of the disease is borne by the skin vessels than when the circulation to the muscles is deficient. The reason for this is suggested by the recent work of Grant and Pearson,[1] who showed that warming to the extent used in the vasodilatation test, which is usually regarded as causing a release of vasomotor tone equivalent to that obtained by sympathectomy, produces little change in the blood-flow to the forearm muscles though it greatly increases the flow to the hand. Kunkel, Stead and Weiss [2] confirmed these observations and showed that they also apply to the calf muscles and foot. They point out that the blood-flow to different parts of the extremities varies with their function, and that a stimulus that increases the blood-flow to one tissue may meet with relatively little response in another. The effect of sympathectomy itself on blood-flow was shown by Grant [3] to be more transient in the forearm than in the hand. Immediately after sympathectomy the forearm blood-flow was increased, but within nine days the vessels regained their tone and the flow returned to what it had been before the operation. The hyperæmia of the muscles after exercise was only moderately increased by the operation. These two groups of workers also demonstrated differences between the reactions of the skin and muscle vessels to certain drugs. For example they found that adrenaline, which causes vasoconstriction in the skin, increases the flow of blood through the muscles, and that both these effects are greater after sympathectomy. This reversal of the action of what is commonly regarded as a vasoconstrictor drug brings into question the action of the vasodilators on the muscles, for until now it has been assumed that a drug which increases the blood-flow through the skin will also increase the flow through the muscles. Observations have yet to be made on the effect of such drugs as the acetylcholine derivatives on muscle blood-flow, and these may lead to the discovery of a drug which will be of value in the treatment of intermittent claudication.

1. Grant, R. T., and Pearson, R. S. B., *Clin. Sci.* 1938, **3**, 119.
2. Kunkel, P., Stead, E. A., and Weiss, S., *J. clin. Invest.* March, 1939, p. 225.
3. Grant, R. T., *Clin. Sci.* 1938, **3**, 157.

ATOMIC ENERGY

WHEN Rutherford and Soddy put forward the disintegration theory of radio-activity in 1904 it was sufficiently revolutionary to prove unacceptable to most chemists, but it was too true to be denied. Despite many attempts to make the commoner bodies radio-active, this was not achieved till 1933; since when, however, one astonishment has followed another, for it has been found that artificially radio-active substances can be made from most of the known elements by bombarding them with neutrons. There has been much ingenious speculation as to what will happen under given conditions of bombardment, and usually the guesses have been remarkably correct, but recently uranium and thorium have caused some surprise in the way they have reacted to "atom-smashers." The uranium atom splits into two nearly equal masses, and it has long been debated whether one would release more energy by dividing this atom than one would have to employ to do it. Hitherto, in such attempts, the balance has been all in the wrong direction, for an enormous number of bullets have to be aimed at the target in order to score a bull. Progress however has lately been made by the discovery that neutrons seem to activate a trigger mechanism within the uranium atom, splitting it into two parts and releasing energy estimated at 200 million electron-volts. This quantity is enormous compared with the energy of the particular neutron that actuates the trigger, but even now a favourable balance of energy has not been obtained, for the total energy of the neutron beam that had to be used to split the atom was 15 times bigger than the emission it brought about.[1] Perhaps indeed we need not be very apprehensive about the shattering effect of these actions. There is a Russian saying that the trees never reach the skies, and Nature has given a good deal of stability to the world we stand on.

A TRIBUTE TO HORSLEY

Victor Horsley and Mr. C. J. Bond were fellow-students at University College, shared lodgings for a time when qualified, and remained in close touch afterwards. Mr. Bond has recalled [2] some of the work and play in which they were associated in a booklet designed to supplement Stephen Paget's life of Horsley, especially in references to certain conjoint inquiries in which Horsley had a larger share than he would allow to be acknowledged. The last of these, undertaken in 1913, was an attempt to ascertain whether testicular tissue regenerates after bilateral subcapsular orchidectomy in birds, and if so whether chickens from eggs fertilised after the operation would show differences in mendelian characters from those bred from earlier generations of spermatozoa. Horsley performed in London operations on a number of fowls and pigeons which were sent back to Mr. Bond at Leicester for breeding experiments; the results, published in the *Journal of Genetics* in the same year, were "somewhat complicated." Commenting on Horsley's insight into the deeper and more philosophical aspects of neuropsychical function, Mr. Bond notes that he was in advance of his time and that though a pioneer in the study of cerebral localisation

1. Tuve, M. A., *Science*, March 3, 1939, p. 202.
2. Recollections of Student Life and Later Days. A tribute to the memory of the late Sir Victor Horsley, F.R.S. By C. J. Bond, C.M.G., F.R.C.S., F.L.S. London: H. K. Lewis and Co. 1939. Pp. 47. 1*s*.

he was insistent that the brain works as a whole. A letter from Horsley written in 1893 throws interesting light on consulting practice in London at that time. "Formerly, i.e. up to 20 years ago, there were large numbers of consultants living, not by the merit of their opinion so much, as by their skill in operating . . . Now they are nearly extinct, and what remains? Why simply the fact that operations are done in many cases by General Practitioners, certainly in the Provinces and the Consulting Surgeon in London is fast specialising and devotes himself to training his opinion in obscure cases." And that was nearly 50 years ago.

DIPHTHERIA TOXOID PREPARATIONS

TOXIN-ANTITOXIN mixtures for active immunisation against diphtheria have been almost entirely superseded by toxoid—i.e., toxin treated with formaldehyde—either alone (F.T.), or combined with antitoxin (T.A.F.) or alum (A.P.T.). Toxoid alone, besides being completely non-toxic, provides a powerful antigenic stimulus, but Povitzky [1] maintains that since A.P.T. was first introduced by A. T. Glenny and M. J. Barr in 1931 and used for human immunisation by D. M. Wells, A. H. Graham and L. C. Havens in 1932 there has been no doubt of its superiority over other toxoid preparations in securing a high initial immunity. She produces experimental evidence that undeniably supports this statement. The claims for A.P.T. as a "one-shot" prophylactic were soon discounted; it was found that in certain children it might act merely as Glenny's primary stimulus, the immunity lasting for not more than a year or so. All workers agree that, whatever the prophylactic used, two doses at least at intervals of two or three weeks are necessary to confer solid immunity. Starting with the knowledge that one dose of A.P.T. is superior in immunising value to one dose of F.T., Povitzky has tried to determine in guineapigs how many doses and what quantities of F.T. are required to produce an effect equal to one, two or three doses of A.P.T. Both preparations contained 25 to 30 Lf's per c.cm. and it was found that the antigenic response to three doses of F.T. was approximately equalled by one dose of A.P.T. Povitzky records that a high and persistent antitoxic titre is achieved if a preliminary small dose of A.P.T. (0·5 c.cm.) is followed two or more weeks later by one dose (1 c.cm.) of F.T. She confirmed the observations of C. Jensen as to the value of nasal instillations of F.T., which rapidly enhanced the antitoxic titre of lapsed-immune guineapigs, and she suggests that restimulation of immunity by nasal instillation, or subcutaneous injection, of F.T. a year or more after the immunising course of injections may be the future method of choice in children.

PHYSICAL EDUCATION IN THE MEDICAL CURRICULUM

No general attempt has hitherto been made either to give instruction to medical men in the specific objects and methods of the physical-fitness movement or even to interest the profession as a whole in its furtherance. This is unfortunate in view of the many technical medical problems that must constantly arise in connexion with a movement essentially related to public and individual health. If this national effort is to gain ground our profession must display a corporate interest in it and the doctors who go out year by year from our training schools must be equipped with some knowledge of its aims and technique.

During the past winter session an experimental course in physical education held at the London Hospital medical school was so successful as to warrant the introduction of similar courses in other schools as a permanent feature in the curriculum. The voluntary part of the syllabus consisted mainly of instruction in the method of preparation for games and athletics and was well attended. The other part, compulsory for fourth- and fifth-year students, was divided between the theory and the practice of the more strictly educational aspects of physical training. To wind up the course a lecture on food, physical fitness and nutrition was given by Prof. E. P. Cathcart, F.R.S., and four special demonstrations by experts illustrated some of the methods used in the training of persons of different ages and sexes. A film-lecture by the organiser of physical education under the London County Council was designed to show the technique adopted in L.C.C. schools, beginning with children at the age of 3. This was followed by a demonstration by men from Loughborough College and one by women of methods suitable for recreational classes, conducted by the organising secretary of the Central Council of Recreative Physical Training. Finally, an instructive combined display was arranged by the commandant of the Army School of Physical Training in conjunction with a medical officer from the Canterbury depot, showing the transformation of men of poor physique who had passed through the various stages of six weeks' and ten weeks' good food, good hygiene and medically supervised exercise, and their obvious enjoyment of their progress to fitness. It is true that the medical curriculum is already overladen, but a well-organised short course in physical culture can be made largely recreational. Its chances of attracting and maintaining the interest of students depend greatly upon the personality of the man chosen to conduct it, and in this respect the London Hospital was evidently fortunate.

ANOPHELES IN BRAZIL

THE need for routine "disinsectisation" of aircraft in the tropics is illustrated all too clearly by the present invasion of Brazil by *Anopheles gambiæ*. This species, whose main home has hitherto been in the African tropical belt extending from the Sahara to the Zambesi, was found in the Natal district of Brazil in 1930 by one of the medical officers of the Rockefeller Foundation, who was making a routine mosquito survey in connexion with the yellow-fever service. The *A. gambiæ* had previously been quite unknown in America, and there was a strong presumption that they had been carried there either by air or by one of the fast French destroyers then on survey work between Dakar in French West Africa and Natal. In 1930 and 1931 there was an unprecedented outbreak of malaria in the Natal district, during which two-thirds of the specimens of *A. gambiæ* caught and dissected were found to be infected with malaria—a rate higher than any previously recorded in American species. In subsequent years the prevailing winds have carried *A. gambiæ* over 200 miles west and north of Natal, and according to the annual review of the president of the Rockefeller Foundation [1] there were over 50,000 cases of malaria in the Jaguaribe valley alone in 1938. The Brazilian government, with the assistance of the Rockefeller Foundation, is now taking steps by which it is hoped

1. Povitzky, O. R., *Amer. J. Hyg.* March, 1939, p. 89.

1. The Rockefeller Foundation. A review for 1938. By Raymond B. Fosdick. New York, 1939, p. 16.

to confine *A. gambiæ* to the relatively arid areas they now occupy; if they should reach the well-watered Parnahyba and São Francisco valleys, it is feared it might be impossible to prevent their spread to a large part of South and Central America and perhaps even to the United States.

FREEDOM, DISCIPLINE AND ZEST

THE right to elect their own rector is a democratic privilege peculiar to students of the four Scottish universities. At St. Andrews in the middle of last century the right was restored only after a revolt against customs that had restricted both the electorate and the field of choice. This story of "freedom regained" served as an introduction to the thesis of the rectorial address delivered at St. Andrews on April 12 by Air Vice-Marshal Sir David Munro, who observed that he was the first officer of the state medical services to receive this "unique and romantic honour." He spoke of freedom and its relation to discipline: without self-discipline freedom may go to the head, and those who have won it sometimes spend the rest of their lives in trying to take it away from others. Freedom in a university consists in liberty to think for oneself, to study the particular fields of knowledge that interest one, to act fearlessly on the dictates of one's opinions and ideals. But a university, like the fighting services, has its own tradition of manners and customs which help not only to maintain external discipline but to foster discipline from within. The people who can deal with themselves are those who win freedom: not only by refusing to be dominated by their habits and emotions or by ideas, but by striking out for themselves, and keeping their purposes in a right perspective. Self-discipline can be acquired by exercise of the body and of the mind, by organised play and by hard work. It is never more essential than when success has been achieved, for success is heady wine—to drink of it easily leads to domination. But unless life is eagerly lived, the fruits of freedom and discipline are wasted. Sir David finds a failure somewhere in our system of education to foster the zest for life. He is convinced that the failure does not lie always in missed opportunity or in the biological make-up of the individual. The thing that is lacking is an interest, not a rule of health; a desire, not a drug; a purpose, not a distraction; and it is in default of these that the faculties lie dormant, and the tide of life runs low. These are the tonics that are wanted. Some of Sir David's adjurations—"Youth is the time to be experimental . . . Keep alive! Keep fire in your belly!"—must have converted the most phlegmatic of his audience to his view that in any walk in life it is zest that matters, zest bridled by discipline but not stifled by lack of freedom.

A JOURNAL OF ENDOCRINOLOGY

IN a leading article at the beginning of this month we reviewed some proposals now being made for the abolition of medical journals. Pending the adoption of other and better means of medical publication, however, most of the existing journals will presumably survive, and new ones must be born as the need arises. The need for a *Journal of Endocrinology* has certainly become evident, for there is at present no convenient place in this country for records of experimental studies of the larger kind, and it is advantageous that such reports should not be widely scattered. That the newcomer will be concerned with the laboratory rather than the clinic is suggested by the names of the council of management, which includes only one clinician; but no doubt space will be given to clinical work conducted on experimental lines, and the promoters are aware of the objections to excessive specialisation. The function of the journal is defined as "the publication of communications which advance knowledge concerning the internally secreting glands, the mode of their actions, the nature of their secretions, and the disorders of their functions." Contributions from all countries will be welcome and may be sent to the editor, Prof. E. C. Dodds, F.R.C.P., at the Middlesex Hospital, London, W.1. The council consists of Prof. F. A. E. Crew, F.R.S., Sir Henry Dale, F.R.S., Mr. F. H. A. Marshall, D.Sc., F.R.S., Prof. G. F. Marrian, Dr. P. M. F. Bishop, Prof. C. R. Harington, F.R.S., Mr. A. S. Parkes, Sc.D., F.R.S., Mr. F. G. Young, Ph.D., and Dr. S. Zuckerman, of whom the last six serve on the editorial board. Dr. R. L. Noble of the Middlesex Hospital will act as assistant editor and the publishers are the Oxford University Press. The first number is to appear in May.

BEDS FOR AIR-RAID CASUALTIES IN SCOTLAND

ABOUT 5000 extra hospital beds are to be made available in Scotland by the erection of hutted annexes to eleven selected institutions. In a "very urgent" letter which the Department of Health for Scotland have sent to these institutions it is stated that the huts will be 144 ft. long by 24 ft. wide and will each contain 36 beds together with the usual ancillary accommodation. Their erection and maintenance will be undertaken by the Office of Works and no cost will fall upon local authorities or hospital managers either for equipment or otherwise. The hospital authorities are asked to allow the building to proceed at once, leaving the formalities connected, for example, with the leasing of the land to be conducted concurrently. The eleven institutions comprise four local-authority hospitals (Robroyston and Mearnskirk, Glasgow; Hairmyres, Lanarkshire; and Ashludie, Dundee), four voluntary hospitals (Astley Ainslie, Edinburgh; Victoria Infirmary Auxiliary Hospital, Busby, Glasgow; Falkirk Royal Infirmary; and Stirling Royal Infirmary), and three mental hospitals (Gartloch, Glasgow; Bangour, Edinburgh; and Larbert).

SPINSTER MOTHERHOOD IN GERMANY

IN 1911 females outnumbered males in England and Wales by 1,179,000. The cause of the excess was a previous emigration of males. The late war made itself felt, among other ways, by increasing this excess, and in 1921 females outnumbered males by 1,736,000. Our community being monogamous, many women of marriageable age are thus condemned to spinsterhood. It is not surprising that, in countries where a decline in fertility foreshadows an imminent fall in the total population, the presence of such "surplus" women should be a cause of concern. If it were decided as part of a positive population policy to make use of the latent reproductive power at the disposal of these women, two courses would be open: the first would be to follow the oriental precedent of establishing polygamy on a legal basis; the second would be to "destigmatise," or even to encourage, spinster motherhood. According to the *Times* of April 13 the last of these measures has recently been adopted by the burgomaster of Wattenscheidt, a town in the Ruhr. On condition that unmarried women of 29 or over notify in advance their intention of having a child, the municipality will give 500 marks to the child and will look after it until it reaches working age.

SPECIAL ARTICLES

MEDICAL REFEREES UNDER THE WORKMEN'S COMPENSATION ACTS

By J. A. Nixon, C.M.G., M.D. Camb., F.R.C.P.
EMERITUS PROFESSOR OF MEDICINE, BRISTOL UNIVERSITY; MEDICAL REFEREE TO COUNTY COURT CIRCUIT NO. 54

A GOVERNMENT Commission is at present inquiring into the administration of the Workmen's Compensation Acts. It may be interesting to consider the duties of medical referees under the present acts, and for this reason I have with the assistance of legal friends compiled a survey of these duties as laid down in the acts and determined by decisions in the courts. The references throughout to reported cases are to Butterworth's Workmen's Compensation Cases (B.W.C.C.). I gratefully acknowledge the valuable help I have received and claim a very small share in the article which follows.

Medical referees are appointed by the Home Secretary under the Workmen's Compensation Act, 1925, section 38, and their duties are to some extent governed by the Medical Referees Regulations, 1932. Their fees and expenses are governed by the regulations of 1932 and the Workmen's Compensation (Medical Referees) Order, 1935. The forms required for their work are prescribed in part by the Workmen's Compensation Rules, 1926, and in part by the Medical Referees Regulations, 1932. A medical referee is appointed for one or more specified county court districts.

Medical referees may be special or general. When a referee has been appointed for special work, cases of that type—e.g., eye cases—must be referred to the special referee. A county court judge may for special reasons refer a matter to a referee of another district in the same county court circuit (Medical Referees Regulations, para. 3b). A medical referee shall not accept a reference unless signed or countersigned by the registrar and sealed with the seal of the court.

In cases involving special difficulty a medical referee may apply to the Home Secretary for sanction to obtain expert assistance—e.g., radiological or pathological—or the opinion of a specialist in the disease or condition under consideration (Medical Referees Regulations, para. 8).

Circumstances of Reference

Under sections 17 and 18 of the act an injured workman is required, in certain conditions, specified in regulations dated June 28, 1907 (which although made under the act of 1906 are still in force), to submit to examination by a medical man selected by his employer. If the workman and his employer are unable to agree as to the workman's condition or fitness for employment, an application can be made to the registrar of the county court under section 19 (2) for the matter to be referred to a medical referee, who shall give a certificate as to the condition of the workman *and* his fitness for employment, specifying when necessary the kind of employment for which he is fit. The referee in giving this certificate is exercising a judicial function, and his certificate as to the matters referred is *conclusive evidence* as to the matters so certified.

Further, under section 19 (4), when no agreement can be come to between the workman and his employer as to whether, or to what extent, the incapacity of the workman is due to the accident (or scheduled disease), a similar reference may be made to the medical referee. This latter provision applies only when the question of the workman's incapacity is not in dispute but the parties are not agreed that the incapacity, or to what extent the incapacity, is due to the accident (Robert Addie and Sons Collieries Ltd. *v.* McAllister, 30 B.W.C.C. 1).

A reference under section 19 (2), inasmuch as it raises the question of complete recovery from the consequences of the accident, involves a decision whether such incapacity (if any) as is found to exist is due to the accident, and this question has to be determined even if the reference does not specifically contain a reference under section 19 (4). The form of reference prescribed by the Workmen's Compensation Rules, 1926 (Form 50 as amended in 1932), provides alternative forms of reference to cover all the questions which may be referred under section 19 (2) and (4), and the reference must be made in one or other of these forms. Otherwise it does not comply with the terms of the statute.

Terms of Reference

UNDER SECTION 19 (INCLUDING REFERENCES UNDER SECTION 12)

The terms of reference will take one or other of the following forms:—

(1) As to the condition of the workman and his fitness for employment, stating whether he is wholly or partially recovered from the injury—i.e., the injury caused by the accident—and specifying if necessary the kind of employment for which he is fit.

(2) Whether and to what extent the incapacity is due to the accident.

(3) As to the condition of the workman and his fitness for employment, stating whether he has wholly or partially recovered from the injury and specifying if necessary the kind of employment for which he is fit, and as to whether, and to what extent, the incapacity is due to the accident. The medical referee must confine his certificate to the questions submitted.

If the terms of reference are not clear, the reference should be returned to the registrar for amendment.

Certain industrial diseases, set out in the third schedule to the Workmen's Compensation Act, 1925, as extended by the Workmen's Compensation (Industrial Diseases) Consolidation Order, 1929, are deemed injury by accident for the purpose of the act, and questions arising with regard to this type of "accident" are referable to a medical referee under sections 12 and 19. On receipt of a reference the medical referee shall notify the workman and employer, on the appropriate form, of the time and place fixed by him for the medical examination. The medical referee shall examine the workman as soon as possible, in any case not later than the seventh day after receiving the reference. If the workman does not present himself for examination the medical referee cannot give his certificate, since para. 11 of the Medical Referees Regulations requires that before giving his certificate the referee shall examine the workman personally. If the workman, therefore, does not keep the appointment for examination, the referee should immediately report the failure to the registrar. Section 19 (5) of the act provides that if a workman refuses to submit himself for examination, on being required to do so, or in any way obstructs the examination, his right to compensation and to take proceedings under the acts shall be suspended until such examination has taken place.

The reference will be accompanied by statements as to the history of the accident and subsequent developments submitted by the workman or the employer and any medical reports supplied to the registrar. If the medical referee requires any further information he can obtain it from the workman when he examines him and through the registrar on acquainting the latter with what further information he requires. He is not restricted in his inquiries by any rules of evidence; he must exercise his judgment as to the weight to be attached to any statements supplied to him. He is not restricted as to his conclusions by the opinion expressed in the medical reports supplied to him. He is required to arrive at an entirely independent conclusion upon the questions submitted for his decision. It is a relevant inquiry, not only as to whether the man is fit for employment at the moment but whether the injury is of such character that there is, owing to the injury, some disability more or less latent at the time, but which may in future become active, and which therefore establishes a reasonable probability of future unfitness for employment (Wilsons and Clyde Coal Co. *v.* Burrows, 22 B.W.C.C. 430), *and in construing the certificate it will be assumed that the medical referee has considered this possibility.* This consideration is specially important when dealing with some of the industrial diseases—e.g., nystagmus and dermatitis. So far as he can do so the medical referee must take into consideration the circumstances and surroundings in which the work under consideration is performed. If he considers such a course necessary and desirable he should request an opportunity to view this process. It is often very difficult to appreciate properly an industrial process from a mere paper description. When certifying what kind of work the workman is fit to perform a medical referee should avoid suggesting operations with the nature of which he is unacquainted, and when certifying that a workman is fit for "light work" he should, if possible, explain what sort of jobs he has in mind, as "light work" is an ambiguous expression and its meaning is not self-evident unless explained. It is sometimes wise to specify definitely the forms of work for which the workman is unfit. Careful attention should be paid to the notes at the foot of the form of certificate.

Statutory meaning of incapacity.—The medical referee when considering whether the workman is or is not still suffering incapacity for work as a result of the accident must do so in the light of the decisions of the courts as to the meaning of the term *incapacity* for work used in the statute.

(1) The incapacity provided for by the statute is not incapacity *to* work but incapacity *for* work. A man may recover from the results of an injury so as to be able to do work but may nevertheless still be incapacitated *for work* because (*a*) although the physical results of the injury may have passed away the mental consequences—e.g., resulting neurasthenia or psychoneurosis—may remain and either actually prevent him from working or reduce him to such a condition that no-one seeing him would employ him under ordinary industrial or commercial conditions; (*b*) the physical results—e.g., the loss of an eye or a limb—may entirely bar him from obtaining any employment suitable for him, or reduce his chances of obtaining suitable employment.

In considering whether a workman is incapacitated or remains still partially incapacitated for work the following considerations must be borne in mind:—

(2) Although the physical consequences of the accident have been corrected, mental consequences may remain, and a man who is prevented from working owing to mental results of an accident is entitled to compensation under the statute just as he would be if disabled for purely physical reasons (Eaves *v.* Blaenclydach Colliery Co. (1909), 2 B.W.C.C. 329). Some medical men are apt to conclude that a man is malingering—i.e., simulating symptoms—when in fact he is suffering from mental results, perhaps obscure results, which in fact are directly or indirectly due to the accident—e.g., so-called anxiety neurosis. There are without doubt cases of fraudulent simulation of incapacity, but my experience is that they are rare. Most workmen are honest men, and the mental disorders grouped under the terms traumatic neurasthenia or anxiety neurosis are now more generally recognised and better understood than a few years ago.

(3) The question whether his condition is the usual and expected result of the accident is irrelevant; the question is whether his condition is or is not a consequence *in fact* of the accident, directly or indirectly, however unusual or unexpected this may be.

(4) A man may have recovered to some extent from the effects of the accident but only so as to fit him for special jobs; that is to say, although he could perform some forms of light work if he could get them, he is not in a condition to become an average workman in some recognised branch of work known in the "labour market" (Cardiff Corporation *v.* Hall, 4 B.W.C.C. 159; Wemyss Coal Co. Ltd. *v.* Walker, H.L. 22 B.W.C.C. 366). A medical referee may certify that a man's labour has no commercial value, and that he would only be employed by an interested or compassionate employer.

(5) The results of the injury may be of a character which renders recurrence of incapacity probable. So long as this condition exists, the workman has not entirely recovered and partial incapacity for work remains. If a workman is suffering from a risk of recurrence of this incapacity, or in cases of industrial diseases, the disease, owing to his already having suffered from the original incapacity or disease, then that is such a disablement as is an effect of the incapacity or disease (see Warrington L.J. in Starkey *v.* Clayton and Son, 18 B.W.C.C. 355).

(6) The incapacity may be either total or partial.

(7) The incapacity need not be solely attributable to the accident. It is sufficient if the accident has aggravated or accelerated or "lit up" a pre-existing pathological condition. In cases of dermatitis, for example, seborrhœa "predisposes" and the nature of the work "causes" the incapacity.

(8) The man may be incapacitated for work, but the incapacity may in no way be connected with the accident. It may be the result of another accident or a disease or due to his unreasonable refusal to adopt remedial measures or (so it has been said) to "brooding" over his troubles. In none of these cases is the incapacity due to the accident. The difference between "brooding" and neurasthenia is often too slight to be established by any medical examination. A morbid degree of "brooding" is an abnormal state of mind which may be an effect of the accident.

UNDER THE WORKMEN'S COMPENSATION ACT, 1925, SECTION 23 (3) (b)

Under this section power is given to the registrar, when considering whether a claim for compensation may be settled by payment of a lump sum, to require a report from a medical referee as to the workman's condition. The judge has a similar power if the question is referred to him by the registrar. When a reference to the medical referee is made under these powers, the terms of reference will be settled by the registrar or judge and, when sent to the medical referee, will be accompanied by any medical reports available and a statement of any relevant facts. The reference will be on Form F in the schedule to the Medical Referees Regulations, 1932. The

medical referee is required to report his independent view as to the workman's condition and its cause. He is not bound by the views expressed in the medical reports submitted to him. The reference as to the workman's condition involves investigation if necessary into the question whether or not his present condition is due directly or indirectly to the accident, and the observations already made as to the meaning of incapacity for work apply equally to references under this section. The registrar has to consider the adequacy of the sum agreed to be paid to settle the claim, and if the present condition of the workman is wholly or partially due to some supervening cause this is obviously a relevant matter for him to consider, and this topic is in the opinion of some authorities open to the medical referee although there appears to be no express decision on the point. Additional support to this view is to be found in section 24 of the Workmen's Compensation Act, 1925. This section provides for settlement of disputed claims for lump sums (composition agreement). The matter of difference may be whether the workman's present condition is or is not due, wholly or partially, to the accident, and the medical evidence may be insufficient or conflicting on this point. The medical referee will make an appointment with the workman (Form H) and must come to a decision. If the workman does not attend, the referee should immediately report the failure to the registrar.

UNDER THE WORKMEN'S COMPENSATION ACT, 1925, SECTION 16

Under section 16, if a workman ceases to reside in the United Kingdom or the Channel Islands or in the Isle of Man, his right to receive compensation ceases, unless a medical referee certifies that the incapacity resulting from the injury is likely to be of a permanent nature. A reference under this section is accompanied by any statement by or on behalf of the workman and/or his late employer and reports from the medical adviser of the workman, and, if his late employer so desires, a report from a medical man appointed by the employer. The medical referee must make a personal examination of the workman. The form of certificate is provided by Medical Referees Regulations, 1932, Form E. The observations already made as to the meaning given to the word "incapacity" apply also to references under this section. What the referee has to consider is whether the incapacity in the sense explained is *likely* to be permanent.

UNDER WORKMEN'S COMPENSATION ACT, 1925, SECTION 43 (1) (f)

Section 43 brings under the act certain industrial diseases specified in schedule III to the act of 1925 and extended by orders of the Home Secretary (Workmen's Compensation (Industrial Diseases) Consolidation Order, 1929, as amended by the Workmen's Compensation (Cataract) Order, 1932; and further orders made April 30, 1932, and May 28, 1934). Incapacity resulting from these diseases is treated as incapacity caused by accident, if a certifying surgeon, appointed under the Factory Acts for the district in which the workman is employed, certifies that he is suffering from one of these diseases and is thereby disabled from earning full wages at the work at which he was employed; or a workman is suspended from his usual employment on account of having contracted any such disease; or the death of a workman is caused by any such disease; providing in either case that the disease is due to the nature of the employment in which the workman was employed at any time within the twelve months previous to the date of disablement or suspension. The disablement or suspension is treated as the happening of the accident, and the "accident" is held to have occurred on the date certified by the certifying surgeon as the date on which the disablement began or, if he is unable to certify such a date, the date on which the certificate is given. In effect the onset of the disease plus the surgeon's certificate as to disablement together constitute the statutory "accident" (see Richards *v.* Goskar (1937), 29 B.W.C.C. 357).

If the employer of the workman is aggrieved by the action of the certifying or other surgeon in giving or refusing to give a certificate of disablement or in suspending or refusing to suspend a workman for the purposes of this section, the matter shall be referred to a medical referee, whose decision shall be final, and the medical referee when certifying shall also certify as to the condition of the workman at the time when he is examined by him, and such certificate shall be conclusive. If a medical referee allows an appeal against the refusal of a certifying surgeon to give a certificate of disablement, the date of disablement shall be such date as the medical referee may determine. If the medical referee disagrees with the date of disablement fixed by the certifying surgeon he may fix another date (Wemyss Coal Co. *v.* Haig (1935), 26 B.W.C.C. 444). Once he has given his certificate he has no power to alter the date of disablement save to correct a clerical error. When he has given his certificate he is *functus officio*.

The medical referee has all the power of a certifying surgeon. His certificate must coincide with the statutory description of the disease or injury. It is insufficient, for instance, to certify "cataract" when the schedule describes the disease as "cataract caused by exposure to rays from molten or red hot metal" (Davies *v.* The Wern Tinplate Co. (1922), 15 B.W.C.C. 242). In giving his certificate he is not limited to his examination of the workman, but he may make any necessary and suitable inquiries for the purpose. No special machinery is provided for making such inquiries. The obvious ways are to obtain the information from the workman and by request to the registrar to obtain the required information from the parties. The certifying surgeon must be careful to state the process in which the workman alleges he was employed. Failure to do this invalidates his certificate. The process need not be the one mentioned in the second column of the schedule opposite the description of the disease.

It is important to observe that the words "suffering from a disease mentioned" are of wide import. It has been held that they include suffering from the results of surgical operations properly incident to the treatment of the disease, and the probability of a recurrence of the disease, if the risk of recurrence is a consequence of contracting the disease and if by reason of this risk the workman is unable to return to his employment (Starkey *v.* Clayton (1925), 18 B.W.C.C. 346). They also include cases when the disease is not due primarily to the nature of the employment within the preceding twelve months but is found to have been aggravated by that employment within the twelve months. The court has drawn a distinction between proneness to further attacks of the disease caused by the first attack and proneness to further attacks due to natural susceptibility in the man himself. The distinction is often difficult to apply. If a workman after and in consequence of the attack of a disease is more susceptible to the disease than he had been before it, he is still suffering

from the disease. If the risk of a further attack is the result not of the former attack but of the workman's constitutional predisposition to the disease and his consequent greater susceptibility, he is not suffering from the disease, if he has fully recovered from the attack under consideration.

The forms for use under this section are contained in the schedule to the Medical Referees Regulations, 1932. The use of the appropriate form is obligatory and must be strictly adhered to. The medical referee, on receipt of the reference, will send notice of the date and place fixed by him for the examination to both workman and employer, and it is the duty of the workman, and, if the employer is applicant, it is the duty of the employer or his representative, to attend the appointment. Forms M and N will be used for this purpose. If the workman or the employer or his representative or both fail to attend, the referee is required to proceed in his or their absence and to decide the matter referred upon such information as shall be available and with or without a personal examination of the workman. If the workman does not attend, the referee should certify accordingly in the second part of the certificate. Nevertheless, it is advisable to inquire, through the registrar, the reason for the workman's failure to appear, since a certificate once issued under section 43 (1) (f) is final. If the absence of either party is shown to the satisfaction of the referee to be unavoidable, he may adjourn the inquiry on the reference and resume it at such place and at such time as he may fix, after giving notice to the parties concerned. He has a similar power to adjourn the proceedings if he requires expert assistance, as provided in para. 8 of the Medical Referees Regulations.

The right of appeal given in section 43 (1) (f) is unqualified, and the "matter" to be referred is anything which can come within the scope of the "action" of the certifying surgeon in giving or refusing to give "the certificate" (Lord Wright in Wemyss Coal Co. *v.* Haig (*supra*)). "The matter" to be referred to the medical referee is the grievance suffered by either employer or workman by "the action" of the certifying surgeon in giving or refusing to give a certificate of disablement. "Action" (in the opinion of some authorities) in the context connotes everything that the certifying surgeon does in giving or refusing to give his certificate and cannot be confined to the mere fact of "giving or refusing to give" (Lord Warrington, *ibid*). The words "aggrieved by the action of the certifying surgeon in giving or refusing to give" appear to be designed to cover a ground of objection to any part of the surgeon's action in giving or refusing to give the certificate (Lord Thankerton, *ibid*). In Haslam *v.* Selby Mill Ltd. (28 B.W.C.C. 82) Romer L.J. expressed grave doubts whether a medical referee has any duty, on appeal from a certifying surgeon, beyond expressing agreement or disagreement with the certifying surgeon, and whether he is entitled to certify that the workman is suffering from a different disease from that referred to in the certifying surgeon's certificate. No decision, however, was given on the point, and the question must be regarded as an open one. It does not appear from the report that the attention of the court was drawn to the decision of the House of Lords in Wemyss Coal Co. *v.* Haig (*supra*). The forms prescribed for use by the medical referee require him to certify the condition of the workman at the time he is examined by him, and in order to give the certificate he must clearly form his own opinion as to what the man is suffering from at that date.

UNDER SCHEDULE 1, PARA. 11, OF THE WORKMEN'S COMPENSATION ACT, 1925

Under this paragraph the judge may submit to a medical referee for *report* any matter which seems material to any question arising in an arbitration. The wording of this provision is very wide. Thus the judge may ask for the opinion of the medical referee as to the advisability of administering anæsthetics for a suggested operation (Gracie *v.* Clyde Spinning Co. 8 B.W.C.C. 630). The report is not conclusive, as is a certificate under section 19; when received by the judge it forms part of the evidence in the arbitration and must be considered by him together with the other medical evidence. The judge is not bound by it and may decline to follow it or adopt it as he considers proper. In making his report the medical referee is entirely free to form his own independent judgment on the point or points upon which his report is required. The form of reference will set out the questions upon which his report is required and will contain a short statement of the circumstances under which his report is required and a summary or copy in full of the medical evidence given in the arbitration. He will make an appointment with the workman (there is no form provided in this case for making the appointment) and make a personal examination as in other cases. He can obtain any further information he desires from the workman. If he requires any further information he should apply for the same to the judge through the registrar. If the workman does not appear for examination, the referee should at once notify the registrar.

UNDER FIRST SCHEDULE TO THE WORKMEN'S COMPENSATION ACT, 1925, PARA. 5

Under this paragraph a medical referee is summoned to sit with the judge as medical assessor. The duties of a medical referee sitting as medical assessor are materially different from those which he has to discharge when acting as medical referee. His primary duty is to assist the judge on the medical or surgical aspects of the case. It is the sole duty of the judge to decide the facts, and he must form his own opinion both on the question of fact and upon the medical conclusions to be drawn from the evidence. But he is entitled to the assistance of the medical assessor in arriving at the latter conclusions. Having formed his own opinion on the points the judge will then ask the advice of the assessor as to the medical inferences to be drawn from these facts. The judge can then rely on this advice or if he thinks fit he may disregard it. The assessor is not a witness and therefore cannot be cross-examined, but any advice he gives the judge becomes part of the evidence in the case. If the judge puts questions to him to answer and his answers introduce new matter, the judge should communicate such answers to the parties and allow them an opportunity to call further evidence. It is not correct, as has been sometimes said, that the assessor may not introduce new matter not referred to by the medical witnesses (see Hall *v.* British Oil and Cake Mills (1930), 23 B.W.C.C. 529). The judge is entitled to act upon the opinion of the assessor, whether there was or was not any corresponding opinion expressed by the professional witnesses. One of the objects of an assessor sitting with the judge is to furnish the court with the means of checking and, if need be, of either supplementing or superseding the opinions of witnesses so far as they rest on medical inferences (see Lord Loreburn in Woods *v.* Wilson (1915), 8 B.W.C.C. 288). Strictly

it is no part of the duty of a medical assessor to make an examination of the workman, but there is no objection to his doing so if no objection is taken by the parties, and it would seem that he is entitled to do so if such examination is required by him to enable him to advise the judge. If as a result of such examination something new is discovered, that should be communicated to the parties and an opportunity given to them to call further evidence. A hurried examination in the judge's room is not a satisfactory proceeding; if a report from the assessor is required owing to conflict between the medical witnesses, the better course would seem to be for the judge to adjourn the proceedings and direct the workman to submit himself for examination by the assessor acting as medical referee under para. 11 of the first schedule. There is no objection to a medical assessor asking questions during the hearing of the arbitration, but he is not entitled to cross-examine witnesses.

In view of Lord Justice Slesser's comments in the Appeal Court in the case of Pensford and Bromley Collieries and Filer (1938), 31 B.W.C.C. 105, it might seem advisable that the result of the medical assessor's findings, when he has been required to examine the workman, should be made in writing to the judge, so that it shall not be necessary for a higher court to conjecture what the nature of the advice given by the assessor to the judge was.

METABOLISM OF TESTOSTERONE

DURING the last few years, as Prof. G. F. Marrian has remarked, speculation about the metabolism of the gonadal hormones and substances related to them has become one of the popular pastimes of both chemist and biologist. The constantly increasing data certainly call for regular revision of the many theories which have been put forward.

In work of this kind it is extremely difficult to obtain precise information by experimental means, and experiment has so far been almost limited to the administration of known substances, usually to man, followed by examination of the excreta for the same substance or possible derivatives. The first of these experiments consisted in administration of biologically active substances, after which the urine was examined for the same particular kind of biological activity. Such tests have mostly been made with œstrogens, but a number—especially in the last year or two—have dealt with androgens.

Bühler (1933), McCullagh, McCullagh and Hicken (1933) and Kochakian (1937) gave small amounts of androgenic extracts or of crystalline androgens, and were able to detect small increases in the androgenic activity of the urine. A more precise experiment was reported by Callow (1938), who found a definite increase in urinary androgens during administration of 50–100 mg. of testosterone propionate weekly in the treatment of enlarged prostate. A castrated male receiving 50 mg. of testosterone propionate daily showed an increase in androgen excretion from 9 I.U. to 81 I.U. per day. The increased excretion of androgen, moreover, remained above the previous level for some time after the end of injection; but even so the percentage recovery was low, since 50 mg. of testosterone is equivalent to 3500 I.U. of androgenic activity. The loss of activity might be due to inactivation of the greater part of the testosterone, to conversion to less active androgens, or to a combination of both. A detailed account of the work was given by Callow, Callow and Emmens (1939), who reported that the administration of testosterone was followed by an increase of the 17-ketosteroids in the urine, as measured colorimetrically—i.e., an increase in androsterone and dehydroandrosterone or in substances closely related thereto. They showed that this increase in hormones or hormone-like substances was at least partly due to the excretion of an unusually large amount of androsterone, but that an inactive isomeride *epi*-ætiocholanolone was also present in comparatively large amounts. Both these substances can easily be derived from testosterone by oxidation of the hydroxy group, reduction of the keto group and saturation of the carbon skeleton.

Cook, Hamilton and Dorfman (1939) carried out somewhat similar research on the urine of men treated with testosterone; and the clinical aspects of the work were dealt with by Dorfman and Hamilton (1939). In the first case recorded 60 mg. of testosterone propionate was given by mouth each day for fifteen days, and afterwards 120 mg. was given daily for seven days. The excretion of androgen rose from 21 I.U. per day or less to 500 I.U. per day. It was found that 11·9 litres of urine containing 1000 I.U. of androgenic activity yielded 40 mg. of androsterone—an amount far above any possible previous content. The inactive isomeride of androsterone was not found by these workers, but the fact that one main excretion product of testosterone—namely, androsterone—seems to be the same, whether the hormone is given by mouth or by injection, is of great interest. In a further experiment Dorfman and Hamilton found that the daily administration for thirty days of 20 mg. of testosterone increased the excretion of androgens from below 21 I.U. to 94 I.U. per day. A month after the end of treatment the excretion had returned to normal. It is noteworthy that Cook, Dorfman and Hamilton did not isolate *trans*-dehydroandrosterone from the urine of these men treated with testosterone propionate.

Possibly these results are complicated by some indirect action of the injected hormone on the adrenal glands or some other organ, but at the moment it is perhaps justifiable to assume that the steroids which appear in the urine after administration of testosterone are direct derivatives of the hormone. Moreover, the probable excretion products so far identified are either the androgen, androsterone, or else the inactive substance ætiocholanolone.

Remarkable experiments by Steinach and Kun (1937) seem to suggest another possibility—i.e., that administered androgens may be excreted in a form having an entirely different type of biological activity. These workers found that the injection of testosterone propionate or of androstenediol benzoate was associated with an increase in the œstrogenic activity of the urine up to about three times the pre-injection level. Data of a similar nature have been obtained by Callow, Callow and Emmens. No chemical evidence has yet been obtained as to the nature of the additional œstrogen, except that it appears to be phenolic. In this case, perhaps, the hypothesis of stimulation of the adrenal cortex has more to recommend it.

This work on the fate of exogenous androgens has clinical as well as academic interest, for it may eventually enable us to diagnose hypo- or hyper-function of the testis from examination of the urine. As has already been pointed out in these columns, examination of the gross androgenic activity of urine seems to throw no light on the level of activity of the testis (Parkes 1937) and more help has been expected from examination of the chemical nature of the excreted substances. Unfortunately however it

cannot be said that the results so far secured are of obvious clinical promise. It is reasonably certain that administered testosterone may appear in the urine as an œstrogen, as a different androgen, or as a biologically inactive substance, and it seems likely that the endogenous androgens—presumably mainly testosterone—will be similarly modified before excretion. Moreover, the excretion products so far identified are not specific to men, since normal women seem to excrete as much androsterone as normal men (Callow and Callow 1938), and *epi*-ætiocholanolone also occurs in the urine of women, having first been prepared naturally from the urine of a case of adrenal hyperplasia (Butler and Marrian 1938).

This conclusion greatly complicates the problem of diagnosing the level of testicular activity by examination of the urine, whether by the biological or the chemical means so far elaborated.

REFERENCES

Bühler, F. (1933) *Pflüg. Arch. ges. Physiol.* **86**, 650.
Butler, G. C., and Marrian, G. F. (1938) *J. biol. Chem.* **124**, 237.
Callow, R. K. (1938) *Proc. R. Soc. Med.* **31**, 841.
Callow, N. H., and Callow, R. K. (1938) *Biochem. J.* **32**, 1759.
— — and Emmens, C. W. (1939) *Chem. & Ind.* **58**, 147.
Cook, J. W., Hamilton, J. B., and Dorfman, R. I. (1939) *Ibid*, p. 148.
Dorfman, R. I., and Hamilton, J. B. (1939) *J. clin. Invest.* **18**, 67.
Kochakian, C. D. (1937) *Endocrinology*, **21**, 60.
McCullagh, E. P., McCullagh, D. R., and Hicken, N. F. (1933) *Ibid*, **17**, 49.
Parkes, A. S. (1937) *Lancet*, **2**, 902.
Steinach, E., and Kun, H. (1937) *Ibid*, p. 845.

MEDICINE AND THE LAW

The Minority Judgment in Mahon *v.* Osborne

Lord Justice Goddard's dissenting judgment in Mahon *v.* Osborne brought out two aspects of possible liability for professional negligence. Mrs. Mahon's son, it will be recalled, died as the result of a swab having been overlooked at the close of an operation for duodenal ulcer. She sued both the surgeon and the theatre sister. With the consent of the trial judge her counsel withdrew the action against the sister on the ground that there was no evidence of negligence against her. The jury awarded damages against Mr. R. P. Osborne, the surgeon, and the Court of Appeal (by a majority of two lords justices to one) upset the verdict and ordered a new trial. Although the proceedings have already been discussed at some length in these columns (*Lancet*, Jan. 28, p. 242, and Feb. 18, p. 399), the issues are so important that no apology is needed for referring to them once more.

The first point which deserves special attention in the minority judgment is Lord Justice Goddard's remark that he failed to see why the trial judge or the plaintiff's counsel should have taken the view that there was no evidence against the nurse. It was admittedly her duty to check the swabs and there was admittedly a miscount. This being so, said the lord justice, "I should have thought that there was abundant, indeed overwhelming evidence against her." It could perhaps be said that the sister who was asked if the check was correct was not the only one who counted, but that some swabs were (or might have been) counted by another nurse; it would follow that an assurance from one sister only that all was right would be of no value at all. The liability of the sister was not directly in issue on the appeal. These judicial observations therefore were obiter dicta. We can hardly close our eyes to the known fact that tactical considerations lead a plaintiff to concentrate upon pressing the claim against the surgeon and to abandon any attack on the nurse.

The second point which stands out in the dissenting judgment is the emphasis upon the surgeon's duty to make some kind of manual search for swabs before closing the body. He has put in a number of swabs as found necessary; he knows where he placed them, and theoretically he knows where to find them when the time comes to take them out again. In so far as he is not entirely preoccupied with his exacting work, he may have some memory of the number of swabs inserted; he cannot leave the matter entirely to the nurse. And even if he thinks that all the swabs he inserted are removed, even if he has the nurse's assurance that the tally is correct, it seems to be suggested that he has still some duty to search before closing the wound. Plaintiff's counsel will probably have pressed the question that it would scarcely take a moment to "run a finger round" or to "make sure" by some kind of manual investigation that no packs have been overlooked. On this part of the case the judges exhibited a curious difference of opinion in the Court of Appeal. Lord Justice Scott, who presided, thought that the trial judge could not lay much emphasis on the duty of final search because the point had not been directly put to Mr. Osborne when he was in the witness-box; this was mentioned as one of the reasons why the original trial must be deemed unsatisfactory. On the other hand, Lord Justice Goddard was at pains to show that the point had been specifically put to Mr. Osborne and that there might be some ground for the jury's possible impression that the witness inferentially admitted that he had made no final search; if so, there would be some evidence (not necessarily very strong) on which the jury could find the surgeon negligent, and consequently the Court of Appeal would not be justified in interfering with the jury's decision.

This supposed duty of the surgeon to search is a point which will need to be carefully watched in this type of action based on professional negligence. Those who know the conditions of surgical operations may find it hard to understand the impressions which prevail in the lay minds of judges and juries. It is quite possible that the layman imagines that, as one pack after another is removed and the visible area diminishes, the geography of the human interior nevertheless reveals itself as distinctly as the details on a large-scale map. It may be that he has in mind the kind of dilemma which is faced by a man who, after packing a trunk for a long voyage, is confronted by an odd sock. He can either grope in the corners of the trunk until he fishes up the fellow to it and makes the pair complete, or he can turn out the whole contents of his luggage on to the floor and satisfy himself by a methodical examination. Though this analogy may be exaggerated and fanciful, in future litigation of this kind it may be necessary to emphasise that any such impression is mistaken. The human organs cannot be laid out for examination on a table and then replaced. The risks of surgical shock and the dangers of protracting the period of anæsthesia (a particularly serious matter, it was proved, in the case of patient Mahon) do not encourage an elaborate technique of groping inside the abdomen.

According to the majority judgments, the original trial at Manchester assizes went wrong because the trial judge entertained and passed on to the jury a false estimate of some observations by the Court of Appeal in the previous case of James *v.* Dunlop,

where the facts were different (the operation being of a different character and comparatively few packs being required) and the findings had special application to those facts. The trial judge had before him no authorised report of James *v.* Dunlop but merely an account of it as printed in a medical paper. According to the majority opinion in the Court of Appeal in Mahon *v.* Osborne certain remarks by Lord Justice Scrutton were taken by the trial judge in the Mahon case to be of general application. Lord Justice MacKinnon (who joined Lord Justice Scott in the majority opinion in the Mahon appeal) thought it unfortunate that the observations in James *v.* Dunlop were put forward at Manchester assizes as though they were a binding rule of law. It was a misfortune, he said, that the jury were not directed that "they must take their standard of care and diligence of a surgeon from those who could alone, from their expert knowledge, inform them of it." The jury had unfortunately been rather "encouraged, if not directed," to disregard the evidence of the technical experts "in the light of some remarks of eminent people as ignorant of the science of surgery as themselves." If this means, as we take it to mean, that the standard of professional care in surgery is a matter on which juries must accept the views of surgeons, it is a welcome re-statement of what we understand to be a well-established rule.

GRAINS AND SCRUPLES

Under this heading appear week by week the unfettered thoughts of doctors in various occupations. Each contributor is responsible for the section for a month; his name can be seen later in the half-yearly index

FROM AN ONLOOKER

IV

IN December, 1917, I won half a prize at school for a speech on the Menace of the Super-State. Surviving members of the audience will recall that I warned Europe against the totalitarianism dear to bees and German philosophers; and they may be sure I still stand by every word. Today I have a similar message; for I want to warn the medical profession against entering the service of the state.

Last week I wrote about the different ways in which individuals and groups act as "father" to a sick man. The state, which is the largest national group, has plausible qualifications for this rôle, since it is supernaturally powerful, is often well-disposed, and in a sense belongs to the citizen. The Russian goes happily to hospital, saying: "I am ill; the state is my father; my father will help me." And so indeed it will; but on its own terms.

Latterly the civilised nations have mostly got rid of the idea that fathers own their children; only, however, to fall into the worse error that states own their citizens, body and soul. If the citizen is the state's property the state will deal with him according to its own convenience: one day it may put him to bed in a grand ward and give him a hundred-guinea operation; next day it may send him to the trenches. The state does not think in terms of what the individual would like: it may be convenient for it to give him the best possible service; or it may not.

I have already tried to demonstrate that when a doctor is employed at a salary the relation between him and his patient is governed by the relation between the patient and the employer. In a state medical service, such as there is in Russia, the state is the employer, and the doctor is no more than a hired technician. This being so, the doctor-patient relationship disappears and is replaced by a state-patient relationship. Indeed the word "patient" should disappear also, for a patient is a person standing in a particular relation to a doctor. Oddly enough it is a member of the United States government, Senator Lewis, that has most forcibly pointed this moral:—

"Hold up here, Mr. Doctor," he said; "we are not asking you to do anything about a patient. . . . We know nothing of patient, don't recognize its existence. It is your creation. We recognize an instrument called citizen who is essential to the welfare of government. He takes the form of man or woman. You have professed to be able to help him to carry on his life. We need his life for usefulness in civil affairs . . . in military for the defense of his nation. And now . . . we are compelled to tell you that we have got to treat you as an officer of the federal government . . . taking care of the citizen."

If this process is carried to its conclusion the citizen will not be attended by a doctor but by a department of state, a medical service whose aims are those of the state itself.

* * *

Now these aims may be admirable. The state may be trying to set up a fine organisation for giving the best possible help to everybody: that is what has happened in Russia, and the people are pleased; that is what would happen if we had a state medical service here. Any state medical service would start like that.

Russia is trying to apply the benefits of science to daily life; so the Soviet medical regime appeals to scientists. The Russian idea of medical sociology seems for the moment generally favourable to the individual; so the medical regime appeals to humanitarians. Both scientists and humanitarians cheerfully see the old relations of personal trust between patient and doctor—with manifestations of them such as professional secrecy—sacrificed to secure these great gains. What scientist and humanitarian do not always recognise is that the aims of the state may be different tomorrow—when the medical profession will still have to carry them out, regardless of its former traditions and functions. In the report of the Royal Commission on National Health Insurance Sir Andrew Duncan and Prof. Alexander Gray referred to "the possibility of conflict between the ultimate ideals of the medical profession, which regards every individual life as alike of supreme importance, and the remoter interests of the community, which in retrospect may not be able to take so impartial a view."

That is one possible objection to including medicine in the state machinery: another is that the state may come to be detested by its subjects; and the servant will come in for some of the dislike felt for the master. No government, even in Germany, can be permanently popular; "the unity of the state in history . . . so far from being a unity, is always breaking down"; and it is surely a bad thing that people should be compelled to get all their medical care from a body towards which they feel aggressive—

that anyone who is ill should have to be attended by persons whom he regards as representatives of a hated despotism. That can't happen here, you say? I grant that in Britain the state has been ingeniously separated in people's minds from the government of the day; our constitution has made it possible to feel violent disapproval of the cabinet while venerating the Crown and admiring the judiciary, the civil service, the army and even the police. But it would be rash to presume on this dichotomy remaining always so clear. Even in this country, moreover, the state is not persona grata in every home: its name recalls unpleasant thoughts of income-tax, or the means test, or an inquisition by a regional medical officer. And associations of this kind may well become a stumbling-block, if only because, as the A.M.A. put it, "the patient who suspects that interests hostile to him may be influencing the physician will consciously or unconsciously describe his symptoms with a view to meeting the supposed or real antagonism."

Those to the Left of me, and those to the Right, may both think this bosh; for at both extremes the state is looked on as something noble and benevolent. I for my part have been strongly attracted by the Russian conception of a friendly governing organisation that (in Marx's phrase) will "wither away" as the people learn to be good neighbours. "What is being built up in the U.S.S.R.," say the Webbs, "is not a government apart from the mass of the people, exercising authority over them. What they believe themselves to be constructing is a new type of social organisation in which the people themselves, in their threefold capacity of citizens, producers and consumers, unite to realise the good life. This is in fact not a state in the old sense of the word, but an organised plan of living which the people as a whole adopt." In such a plan I would willingly see myself and all the medical profession merged; but even for Russia the hope of this new dispensation is fading; and the Soviet state, like all the others, fulfils H. J. Laski's cold-blooded definition: "the state," he declares, "is simply coercive power used to protect the system of rights and duties of one process of economic relationships from invasion by another class which seeks to change them in the interests of another process."

Coercive power—that is the state in essence; its use is the function of government. But the function of medicine has hitherto been to befriend the individual, not to represent authority. True, the coercive government will always need medical agents and advisers, for there are points at which both sick and healthy must be coerced for the safety of the community. But the fact that there must be medical officials empowered to act for the government—to assist the police—does not mean that the whole medical profession should take government service, abandoning (quite gratuitously) the doctor-patient relationship of many centuries and substituting for it a state-citizen relationship far less favourable to the treatment of disease. On the contrary, today more than ever there is need for buffers between the individual and the coercive power of the state. Social institutions are intolerable if they are too rigid, and they should be constructed with a little "give." It is the duty of the state to be just; but (even assuming its justice) men and women also require mercy. Hardly any disorder is commoner than minor maladjustments of the human animal to the complicated and "unnatural" demands of society, and it is essential for mental as well as physical health that help should be available for those in this kind of need. If it is one of the doctor's functions to provide it he certainly should not be an official.

* * *

The time has come, it seems to me, for a new conception of the function of the state in regard to medicine and the sick. The old idea was that the government should see to "public health" and leave diagnosis and treatment to others. This situation, if it ever existed, has broken down; for governmental institutions are doing every kind of medical work—preventive, diagnostic and curative—and they do more every day. I want to suggest that the government's part in medicine should be limited to the duties of government—i.e., the exercise of coercive power. It should dictate the measures to be taken against epidemics; it should, in the last resort, certify the insane; it should if need be decree sterilisation and other measures of eugenics. But it should leave the rest of medicine to medical men and medical services whose aim is to do the best for each individual patient under their care. Let the government govern for the sake of "the state," and let the profession carry on its traditional work for the sake of human beings.

Such a division of function is by no means impracticable (*pace*, again, Herr Hitler; and, perhaps it would now be courteous to add, Signor Mussolini). But it is worth considering only if doctors at large still have a firm faith in the humanitarian ideas handed down to them. For otherwise they will have no fundamental objection to becoming officers of state.

* * *

Medicine at first used science as an instrument, and still does so. But the medical student is increasingly trained to be a scientist before anything else, and many people of scientific training question the compatibility of biological and political science with humanitarianism. The extent to which the invasion of medicine by scientific—or perhaps pseudoscientific—ideas may weaken or even destroy the traditional attitude of doctor to patient is illustrated by a distinguished physician's remark that "a large proportion of the population are not economically worth private doctoring. They are morally, physically and mentally inferior people, and their doctoring must be done by a cheaper method than that of providing each with a private doctor."

We shall all agree, I suppose, that it is a mistake to serve two masters. And if it is impossible to look after the interests of patients while looking after the divergent interests of an employer, it is also impossible to give whole-hearted help to patients if, on eugenic grounds, one considers them inferior objects not worth bothering about, or if one is ready to sacrifice them (by experiment or otherwise) to the pursuit of knowledge.

But does science really enjoin us to sacrifice the individual? The humanitarian ethic, the Christian ethic, is an expression of the evolutionary principle of mutual aid within the species—a principle that has supervened on the struggle for existence and is alone capable of giving mankind a richer future. What are considered the "higher virtues" of charity and self-sacrifice are biologically means of progress; and so is our belief in the value of human life and our duty to preserve it. As scientists we may see that a particular person is of little value to the world and not worth attention; but as scientists we must also recognise another and greater truth—namely, that a failure to help this "inferior" person, as we should

wish to be helped ourselves, betrays the compact, of man with man, on which civilisation rests.

It is, I submit, valuable to society that a body of men should be dedicated, like the medical profession, to this mutual aid. But they cannot be lukewarm. If they once begin to distinguish in principle between man and man their value sharply diminishes; for each exception to their rule—small as it may seem—reduces confidence. We are told that during epidemics of cholera in Soviet Russia the inhabitants of some of the badly infected villages were all shot so as to prevent their spreading the disease. Such an action may be good immunology or good government, but it is not good medicine; for a doctor must not sacrifice, to other purposes, a life entrusted to him. In the same way it is not for doctors themselves to order the sterilisation of a patient or a group of patients, however useful this may be. Confidence in the profession rests on the idea that it exists to save, not to destroy. Destruction, detention, and punishment are acts of government: it is the duty of governments, not of medical practitioners, to balance the common good against individual happiness.

There must be specialisation of function in society. Different kinds of work appeal to different personalities, and I suggest that nobody should become a practising doctor unless he believes that the doctor's humanitarian function is really useful, and unless he is prepared to stick to the rules that follow from it. A few exceptions in principle—a few declarations that the poor do not matter—and the whole structure falls to the ground. Furthermore, no doctor should attempt to practise if he thinks the interests of science must outweigh those of his patients. The work of an individual scientist is often far more useful to mankind than that of any individual practitioner. Few will dispute it. Yet the care of human beings is in the long run no less important than the pursuit of knowledge: the state of the civilised world today is evidence enough of the folly of preferring technical to ethical progress.

In suggesting once more that kindness and personal service represent the highest biological wisdom I admit there must be reason in all things: I do not want the doctor, in the name of kindness, to abet any kind of crime. But the people who are always explaining that the interests of the community override those of the individual seem to forget that the community is composed of individuals—though some are dead and some not yet alive—and has no existence or meaning apart from them. The form of idealism that will sacrifice the rights and happiness of individuals to the well-being of the abstraction called the state can easily be carried too far, and we should also be cautious, I believe, in embracing the form of idealism that will sacrifice the rights and happiness of the living to those of a hypothetical posterity. Since perfection can never be reached, such idealism might demand that every succeeding generation should be sacrificed to its successors; "the Future" is capable of becoming as insatiable an idol as "the State" has already become. The people of the future, like the people around us, demand our anxious thought; but the world would certainly be a more hopeful place to live in if fewer of its rulers found it necessary to do evil for the sake of the remoter forms of good.

* * *

A time may come when all this will sound antediluvian; and to some it will sound so today. A time may come when the medical scientist (I do not call him doctor any more) will be employed directly as an agent of government—as the ruthless gardener who throws out weeds and tends only valuable plants. As yet, however, neither the public nor the facts demand that our profession should cease from its traditional endeavour—an endeavour to help all comers to make the most of life. For the present at least the practitioner's rôle as a eugenist is to concentrate on positive rather than negative eugenics, and where action has to be taken against the interests of errant and aberrant individuals the task is one for a government and not for a profession.

Though the medical scientist can be, and ought to be, the adviser of governments, the practising doctor should not identify himself with them. His happy function is still to bring the blessings rather than the curses of science to the people under his care.

PANEL AND CONTRACT PRACTICE

Salvation through Soil

THE Cheshire local medical and panel committee, which has never lacked initiative, has prepared a "medical testament on nutrition and its relation to agriculture." Looking back on twenty-five years of medical benefit it concludes that though health insurance has done much to cure illness it has done almost nothing to prevent it; while mortality-rates fall the sickness-rates and the claims on approved societies rise. A large proportion of all this illness is caused by unsound nutrition. Dental disease and its consequences are preventable, for people of our own race living in Tristan da Cunha have perfect teeth; rickets is preventable; nutritional anæmia is preventable; constipation and "the host of digestive disorders which result from it" are nearly always due to ill choice or ill preparation of food. And these are only a few of the disorders attributable to wrong feeding. The committee does not want to advocate any particular diet. "The esquimaux, on flesh, liver, blubber and fish; the Hunza or Sikh, on wheaten chappattis, fruit, milk, sprouted legumes and a little meat; the islander of Tristan on his potatoes, sea birds' eggs, fish and cabbage, are equally healthy and free from disease." But the food of all of them is for the most part fresh from its source, little altered by preparation, and complete. Reviewing McCarrison's observations on diet in India, the committee ruefully declares: "Probably half our work is wasted, since our patients are so fed from the cradle, indeed before the cradle, that they are certain contributions to a C 3 nation. Even our country people share the white bread, tinned salmon, dried milk régime. Against this the efforts of the doctor resemble those of Sisiphus."

Though it is not the province of the doctor to advise agriculturists, the Cheshire committee sees the remedy in "better manuring of the home land so as to bring an ample succession of fresh food crops to the tables of our people"; the present exhaustion of the soil must be arrested and its fertility restored. The better manuring it has in mind is the revival of the plan by which all animal and vegetable waste is utilised for the land—a principle of Eastern agriculture for which Dr. G. T. Wrench pleads in a book reviewed on another page. Describing the system devised for this purpose by Sir Albert Howard,

the committee points to the value of this system in disposing of municipal and village waste, and describes the success it has given on the Iceni estate in Lincolnshire where market gardening and farming will soon be conducted, it is hoped, with little or no importation of fertilisers or foodstuffs.

A meeting was held on March 22, with the lord lieutenant of Cheshire in the chair, to put the "medical testament" before the public. Sir Robert McCarrison, F.R.C.P., said that though most people in this country get enough of the fuel foods millions go short of the protective foods; yet millions of acres of land are deteriorating or overgrown with weeds, and thousands of workers stand idle in the market-places. Sir Albert Howard, formerly director of the Institute of Plant Industry at Indore, India, expressed his view that insects and fungi are not the cause of crop diseases but only come when agricultural methods are bad. The protection of crops by sprays and powders is unsound because it merely preserves the unfit and covers up the real problem—which is how to grow healthy crops. The birthright of every animal and every plant, he said, is health, and for plants and animals alike it can be secured by returning to "the proper old methods of the mixed farm."

Dependants in War-time

The Aberdeen insurance committee has been considering the question of the treatment of the dependants of men who may be called up for service in the event of war, and they have decided to bring the matter to the notice of the local branch of the B.M.A. and of the Department of Health for Scotland. Drugs would have to be paid for, and the doctors could hardly afford to do the work for nothing. In the late war the names of men who enlisted were removed from the lists of their insurance practitioners, whose remuneration was thus reduced. Would this happen again and would the doctors, in districts that are not evacuated, be expected to assume responsibility for the treatment of the wives and families of their former patients, and if so, under what terms? Possibly, if the Department of Health decided to set up a scheme for the treatment of the dependants of men joining the colours a practical method would be to issue vouchers to dependants, who, on the presentation of such vouchers, would be entitled to obtain treatment and prescriptions. The cost would be considerable, and could not be met from insurance funds; probably it would have to be met from state funds.

The Mixture—As Before

The Sheffield insurance committee has had a curious case to investigate. A practitioner was said to have issued to an insured person on his list a prescription ordering medicine upon a form other than that provided by the committee and a firm of chemists to have presented for payment a script in the name of the insured person though they had not dispensed the medicine upon presentation of the script. This was not an isolated incident. The joint services subcommittee had found that by arrangement with the manageress of the branch of the firm of chemists some of the practitioner's patients were able to obtain supplies of medicines and appliances without seeing, or obtaining an order from, the practitioner; particulars of the supplies were subsequently entered upon signed forms supplied by the practitioner, which were then presented for payment. The subcommittee found that this practice had been carried on for some years without the knowledge of the directors of the firm, and expressed the view that the issue of a book of blank signed prescription forms by the practitioner was apt to lead to serious abuse. The doctor was censured and the Minister of Health is to be asked to withhold five guineas, to be deducted from his remuneration. The firm of chemists has been cautioned.

Another practitioner issued a prescription to an insured person bearing directions for the substance to be used by all the persons in the house, some of whom were not his patients. He also will probably be the poorer by five guineas. Attention has often been drawn to the impossibility of securing that no-one other than the insured patient consumes medicines ordered, particularly cough mixtures, oil and malt, and the like, but broadcast prescribing is surely a novelty.

OBITUARY

WILLIAM HALLOCK PARK

M.D. NEW YORK

Dr. W. H. Park, director emeritus of the bureau of laboratories of the New York city department of health, died in New York on April 6 at the age of 76. From 1897 he had been professor of bacteriology in the University of New York, and for 43 years he was director of the city laboratories. On his retirement from the latter post in 1935 the William Hallock Park laboratory was built to serve the city in his honour, and he continued to have his office there.

From an early date public health appealed to Park and his interests came to embrace not only bacteriology and immunology but general preventive medicine and hygiene. With his able colleague Dr. Anna Williams he wrote "Pathogenic Microorganisms," which became a standard work in all English-speaking laboratories and went through ten editions; he also edited and wrote many articles for a book on "Public Health and Hygiene," of which a second edition was later called for. His knowledge, judgment and energy gave sterling service in every branch of public health to the inhabitants of New York city. The list of his personal investigations would cover almost all sections of bacteriology and immunology, in many of which he was long recognised as an authority; but most conspicuous perhaps was his work on diphtheria, poliomyelitis and tuberculosis. About forty years ago Park and Miss Williams isolated and trained their famous Park-8 strain of diphtheria to produce ever more potent toxin, and generously supplied subcultures to the whole world. It is probable that almost all the diphtheria antitoxin produced during the next quarter of a century was made with this strain, which in many laboratories is still producing excellent toxin for the manufacture of prophylactics and for the immunisation of horses. In 1894 he produced the first diphtheria antitoxin made in America, but his name will be far more closely associated with prophylactic immunisation against the disease. He was attracted by Behring's publications in 1913 and thenceforward worked incessantly both in the laboratory and by energetic public advocacy—with the aid of newspapers, illuminated signs, films, and vans equipped for immediate immunisation circulating in parks and children's playgrounds—to persuade the parents of New York to immunise their children. The success of this

remarkable campaign is well known; his card-index system for the children of the city justified the expectation that the names of Schick-negative children would appear rarely, if at all, amongst those certified as suffering from diphtheria. Though his first prophylactic toxin-antitoxin mixture has now given place to later and more satisfactory preparations, it will long be remembered as the first diphtheria prophylactic used with continued success on a huge scale. To Park's investigations into infantile diarrhœa was largely due the prohibition of the use of unpasteurised milk in New York city. His plan of combating cerebrospinal fever by having trained specialists always available to the practitioner—somewhat analogous to the English arrangements for smallpox—yielded a rich harvest of information.

Dr. Park's unaffected and generous disposition led him to put his wide experience and knowledge unreservedly at the disposal of anyone interested, and medical men in many countries will recall with gratitude how they received from him valuable hints, information, cultures and samples of serum—all the wealth of his experience in the great city whose health he guarded so long and so fruitfully.

JAMES WILLIAM EDINGTON

M.D. EDIN., D.P.H.

As we recorded last week, Prof. J. W. Edington of Sheffield died on April 9, from injuries received in a motor-car accident which also caused the death of his wife and another passenger. Two sons survive him.

He was born in 1889 in Berwickshire, and after a distinguished undergraduate career in Edinburgh he graduated in medicine with honours in 1913, taking the D.P.H. a year later. Then came the war, and despite a stiff ankle, the result of an injury on the football field, he served in the Royal Army Medical Corps till 1919: after eighteen months as assistant pathologist to the 37th General Hospital at Salonika in 1916–17 he was invalided home and thereafter he worked in the Canterbury and then in the Shorncliffe District Laboratory, being in charge of the latter for some time. While in Salonika he was awarded the Croix de Guerre.

[*Russell Crimp*

On demobilisation Edington became assistant bacteriologist in Bradford, but in the following year he was appointed lecturer in bacteriology to take charge of the University public health laboratory in Sheffield under the direction of the late Prof. J. S. C. Douglas. Meanwhile he had obtained the degree of M.D. with honours. Apart from the teaching duties of his new post, the rapidly increasing amount of routine investigation called for organising capacity of a high order, and this Edington showed himself to possess. He was quite happy in tackling either routine work or complicated problems, and one who has worked with him says that "it was always a pleasure and an education to be with him, for no method was too intricate for him to master and no detail too trivial for him to notice." When in 1932 a chair of bacteriology was created in Sheffield, Edington was the obvious choice for the appointment; in addition he became honorary bacteriologist to the Royal Infirmary and the Royal Hospital, the Jessop Hospital for Women and the Children's Hospital. Shortly before his death he had drawn up plans for the building and a complete scheme of organisation of an elaborate new laboratory service for the city of Sheffield, of which he was to be director.

His enthusiasm for hard work and his meticulous care for detail were reflected in his research, much of which related to problems in public health. His main interest, however, was in tuberculosis and this no doubt arose largely because he himself had developed a tuberculous lesion in his left ankle, which unfortunately somewhat limited his physical activities. He spent many months as a patient at Leysin and it is typical of the man that during this time he interested himself in observing the effect of sunlight on skin and subcutaneous temperatures, inserting thermometers into his own tissues for the purpose. The small bulk of his published observations on tuberculosis is explained by the fact that for ten years he had worked on the chemotherapy of this disease, making and laboriously testing many complex compounds; his results were not without promise, yet he was never satisfied with—and therefore did not publish—his partial successes, persisting in his attempts to find a substance which would satisfy the high standards he had set up.

This account would be incomplete without mention of Edington's kindliness and courtesy to all who came into contact with him, no matter in what capacity, and the enthusiasm and help he showed to student activities whether in the classroom or the playing fields. "Those privileged to count him among their friends will always remember his unselfish generosity, his extreme modesty and his kindly nature; it was a joy to him to help others. No-one could wish for a finer or more loyal colleague."

WILLIAM EDWARD SARGANT

M.R.C.S

Dr. Sargant, who died on March 29 at Amersham, qualified in medicine in 1893 and then held an orthopædic appointment. But at St. Bartholomew's he will be remembered rather as the school registrar, a post which carried with it the arranging of clerkships and dressership in the wards. Students of that period will recall the bluff, friendly reception in the registrar's office where they made an acquaintance which outlasted hospital life, for Sargant ran a registry office for Bart's men in practice which was a model (and one of the first) of its kind. Less familiar was another side of Sargant's life. For fifteen years he was secretary for cases at the headquarters of the Royal Medical Benevolent Fund, and it was only when this post encroached too much on his time and thought that he laid it down in 1913. To this work Sargant gave the same care and business-like attention that he did to his registrarship and it was combined with a thoughtful consideration which allowed him to move with equal freedom among the applicants and their friends, the subscribers, and the managing committee of the fund. He was also one of the trustees of the Charles Bailey Charity which at one time held a few houses to be used as rest-homes for aged members of the medical profession or their widows. Sargant was instrumental in transferring this trusteeship from individuals to the R.M.B.F. There are many who will hold him in grateful remembrance.

WESTMINSTER HOSPITAL

OPENING OF NEW BUILDINGS

ON Thursday the new buildings of Westminster Hospital in Horseferry Road were formally opened by the King, though they will not be ready to receive patients until the end of May. The buildings will have cost £850,000, and it is remarkable evidence of the persistent flow of the substance of charity that with the aid of Mr. Bernard Docker's financial acumen they will open almost free of debt. Apart from grants from the King's Fund and London University, the hospital has received financial assistance from the Middlesex county council, which has a direct interest in the beds for early mental cases, and the Westminster City council. Much the largest proportion of the amount has, however, been subscribed by the public, mostly in small amounts.

A NEW OUTPATIENT SYSTEM

Of its many original features the most striking is the close connexion between inpatient and outpatient departments, based on the conception that every patient ought to be under the care of the same medical personnel throughout the whole of his illness. The familiar elongated outpatient departments have here been turned on end, and the corridor has given place to the lift. Each floor contains the inpatient unit of one department and the corresponding outpatient clinics (fig. 2). There is of course no direct intermingling of patients, so that there is no fear of introducing outside infections into the wards, but the same sister is in charge of the whole department, and the distinction between outpatient and inpatient physicians and surgeons has largely disappeared. Further (an idea originating from the new orthopædic hospital at Copenhagen), each floor has its distinctive colour for everything from paintwork and crockery to outpatients' cards. Each floor also has its own almoner, record department, and telephone operator, an arrangement that will facilitate easy and effective liaison between the hospital staff and outside doctors. When the system is in full working order the plan is for most of the outpatients to be seen by appointment, and it is hoped that this will prove feasible without added trouble or expense.

FIG. 1—View from the west.

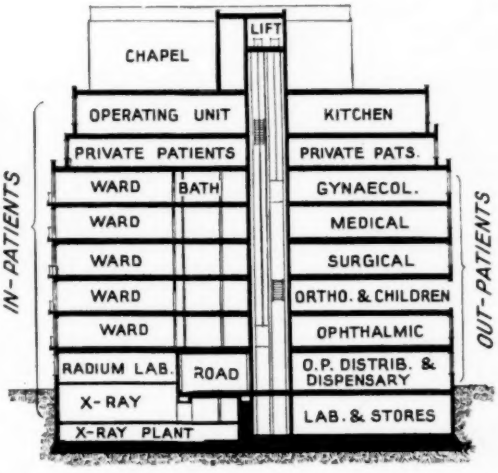


FIG. 2—Vertical section showing corresponding inpatient and outpatient departments on the same floors.

RECEPTION

A covered roadway, built on its own foundations so as to eliminate vibration, runs through the hospital from Horseferry Road to Page Street, and the entrances for patients open on to this. Casualties and emergencies are taken direct to the surgery; other outpatients go to the main entrance and if they have a doctor's letter addressed to a definite department they are taken there as soon as they have seen the almoner. Most outpatients, however, are first seen by the reception officer, who decides to what department they should go. There will be three of these officers, two being on duty in the morning and one in the afternoon, and one being on call at night. They will be qualified men who have done at least two house appointments and are candidates for chief assistantships.

WARDS

The units on each floor consist of a ward for male and one for female patients, usually with 11 beds in each, and three cubicles for cases requiring special nursing or for "contributory" patients who can afford to pay a flat rate of 5 guineas a week. Of the total of 400 beds 48 will be reserved for paying patients who will be charged 6–12 guineas a week. In the children's and maternity wards the beds are divided into two sections, so that in an epidemic one part may be shut off. In the children's ward the cots are either surrounded by glass panels or grouped in pairs separated by glass screens (fig. 3), and there is a treatment room where dressings can be done without disturbing the ward. A flat is provided for the nursing mothers of sick babies and there is an incubator-room for premature babies.

KITCHENS AND A.R.P.

Most of the patients' food will be prepared in the main kitchens at the top of the building and taken from there in thermos trolleys to the wards by lift. In this way it will be possible to serve a meal for the 400 patients in 12 minutes. As an annexe to the main kitchens is a small "teaching" kitchen, simply equipped with a gas range, where patients or parents can be instructed by the hospital dietitian in the preparation of special foods.

Like other teaching hospitals the Westminer would be a casualty-clearing hospital in time of war. With this in view the covered roadway is fitted with air-locks at either end so that it will be possible to decontaminate gas cases before their admission. The roof is strengthened to withstand incendiary bombs and the lower ground, first, and second floors can be supplied with air under pressure during a gas attack. In an emergency, too, food can reach the lower floors from the kitchens in the basement of the nurses' home.

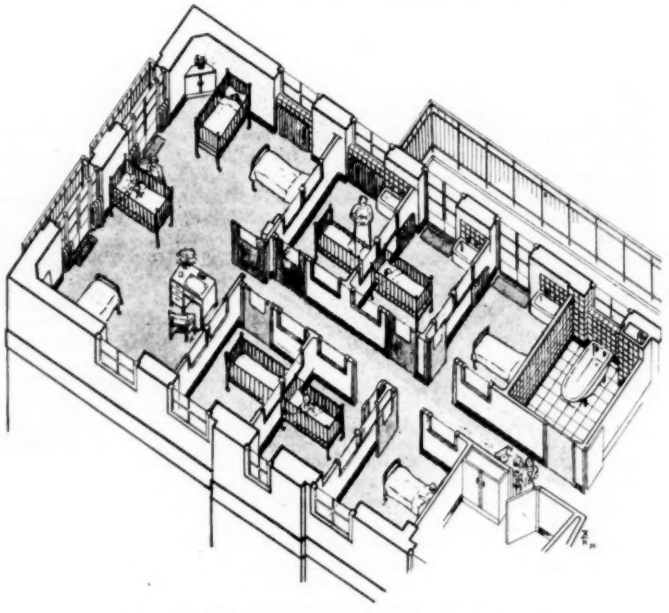


FIG. 3—Diagrammatic view of children's ward.

PARLIAMENTARY INTELLIGENCE

ON THE FLOOR OF THE HOUSE

BY MEDICUS, M.P.

THE floor of the House in Easter week, 1939, was occupied by one of the greatest dramas that have ever been played there. There were criticisms of the Government and of past and present policy, but there was behind it a unity of purpose more real than it has ever been before. Great Britain leading a peace front of Europe. Men with great names spoke, discussed, argued, denounced, pleaded—but it was a drama not of names but of the House of Commons speaking for the people of Great Britain.

* * *

There were no parliamentary meetings apart from the sittings of the House of Commons and the House of Lords, but even in these intervals of active duty the work of Parliament proceeds. Publications are produced and among them we have just had the report of the Select Committee on Parliamentary Elections (Mr. Speaker's seat). This is a survey of parliamentary institutions with special reference to the powers and duties of the Speaker, and the Speaker is the guardian of parliamentary and democratic liberties. It is a report well worth reading and can be got from the Stationery Office for 1*s.* 3*d.*

* * *

One of the activities that continues during the short Easter recess is the consideration of bills by members interested and the drafting of amendments. The Defence Bill, which was introduced and passed its second reading in a two days' debate immediately before the adjournment, is a long measure bristling with technical and other difficulties and of especial interest to the medical profession. The adequacy or inadequacy of civil defence by means of shelter provision or by evacuation of civilian populations from dangerous areas will determine whether the doctors' work in case of air attack in war is possible or impossible. One of the strongest arguments in favour of the evacuation of as many of the civilian population as are not required from dangerous areas is that to leave them there is to invite very numerous—perhaps overwhelmingly numerous—casualties which will overwork stretcher-bearers and first-aid posts and swamp the hospitals. The bill provides for compulsory shelter arrangements and training of staffs of the employees of industrial concerns on the responsibility of the employers assisted by government grants in one form or another. But this compulsory provision of shelter and organisation does not apply if 50 or less persons are employed. This means, unless the bill is amended in committee—and the bill is to be taken "on the floor of the House," which means in the chamber of Parliament itself instead of in a committee room upstairs—that in every semi-residential area where there are a number of small industrial establishments there will be no provision in many cases and therefore very numerous casualties in case of attack. This is an obvious matter for amendment. Another feature of the bill is that while the provision for shelter accommodation and organisation is laid down for factories and places where large numbers of people are employed there is no shelter protection made compulsory for the large tenement dwellings or large blocks of "luxury flats." Any medical man practising in an area where there are large blocks of flat-dwellings, as in London, Edinburgh or Glasgow, will realise the necessity of such shelter provision. In the case of some premises this provision of shelters will be very difficult, if not

impossible, owing to lack of space. In others it is costly and cannot be done by individual flat-dwellers. To leave shelter provision to an agreement between tenant and landlord as is implicit in the absence of provisions of a special character in the bill is to invite wholesale casualties.

Another aspect of A.R.P.—the care of women, children and other persons evacuated to rural areas—will impose severe duties on many medical practitioners. Little rural parishes will have their populations doubled and probably more than doubled, and the problems of water-supply, sanitation and overcrowding will be many. The school camps which are to be erected for use in peace-time as holiday centres may prove especially useful in war-time for the special purpose of isolating groups of infectious cases. Another section of the bill of particular medical interest is that dealing with compensation for injury during training and under peace-time conditions. This is likely to need considerable amendment, for in its present form it does not conform to the accepted practices and definitions of workmen's compensation.

Drafting of amendments in the Civil Defence Bill and on the Camps Bill is now proceeding. The Camps Bill will be considered on April 20, and the Defence Bill later, and next week we have the Budget with an especial interest for every taxpayer, whatever his employment, calling, trade or profession may be. The taxation pill will be coated with the sugar of loan money; but some time somebody has got to pay the loan and immediately everybody will have to pay the interest.

FROM THE PRESS GALLERY

The Shortage of Nurses

IN the House of Commons on April 18, during debate on the civil estimates, Sir FRANCIS FREMANTLE moved the following resolution:—

That this house, taking note of the report of the Inter-Departmental Committee on Nursing Services, recognises the inadequate supply of nurses to meet the increasing demand for their services and the urgent need of reform in their training, registration, and conditions of service both for institutional and domiciliary nursing.

The present shortage of nurses was, he said, obvious, and most hospitals were short of nursing staff. Factors in the increased demand included the greater accommodation in voluntary hospitals, the bigger demand for hospital treatment, and the development of medical technique and extension of services. Some 20,000 entrants to the profession were needed each year, or 8000 more than the present rate. The secondary schools were an ideal source of recruitment, but they could not supply anything like the numbers needed, and in recruiting from elementary schools the great difficulty was to fill the gap between the age of 15 and the time when the girls would enter the wards. Many of the statements made about the conditions of service were exaggerated. Great improvements had taken place in recent years, but in many areas and institutions conditions needed remedying. Long hours of work were the chief factor. Reduction of hours was handicapped by shortage of recruits, but the shortage would continue while hours were not reduced. Somehow that vicious circle must be broken. It was necessary to dangle financial inducements before the recruits. Nurses were badly underpaid, and the pensions unsatisfactory. Recruitment should be considered on a national basis. Unreasonable rules and restrictions had a bad effect on recruiting, but the new rules of the L.C.C. hospitals were an example of enlightened reform. People had traded too long on the goodwill of a great profession. It was now a duty to give nurses conditions essential for the service under the changed conditions of today.

THE MINISTER'S REPLY

Mr. ELLIOT prefaced his reply with the statement that the Government did not intend to defer all action until the final report was delivered. The Government accepted the general conclusions of the reports so far received relating to England, Wales, and Scotland. The shortage of nurses was not due to women shirking unpopular jobs but arose from the increased demand. Arrangements were under consideration for organising preliminary training of elementary and secondary schoolgirls, which would fit in with the proposed division of the preliminary examination into two parts. The rule proposed by the General Nursing Council to enable this "splitting" to be effective would be approved. In regard to conditions of service it was proposed to issue a circular to local authorities on the recommendations made in the reports, and to invite the British Hospitals Association to do the same in respect of the voluntary hospitals. On the subject of nursing services in war-time, Mr. Elliot said that the Government were asking for 100,000 women now to meet the need for expansion. Employers of large staffs were being asked to give facilities for training, and retired trained nurses were invited to register with the central emergency committees. It was proposed to place in existing hospitals 100,000 additional beds for which staff was not at present provided. The total of beds for which staff would have to be provided was about 120,000. For these 40,000 nurses and nursing auxiliaries would be needed in hospitals alone.

Some of the recommendations in the Athlone and Alness reports, said Mr. Elliot, involved finance. The Government were giving careful consideration to the whole question of salaries, and he hoped to be able to make a fuller statement on this subject at a reasonably early date.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED APRIL 8, 1939

Notifications.—The following cases of infectious disease were notified during the week: Smallpox, 0; scarlet fever, 1568; diphtheria, 755; enteric fever, 8 (27 "expected"); pneumonia (primary or influenzal), 1161; puerperal pyrexia, 184; cerebro-spinal fever, 35; acute poliomyelitis, 3; acute polio-encephalitis, 3; encephalitis lethargica, 3; dysentery, 25; ophthalmia neonatorum, 96. No case of cholera, plague or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on April 14 was 3266, which included: Scarlet fever, 654; diphtheria, 647 (carriers, 33); measles, 10; whooping-cough, 985; puerperal fever, 21 mothers (plus 13 babies); encephalitis lethargica, 302; poliomyelitis, 4. At St. Margaret's Hospital there were 24 babies (plus 10 mothers) with ophthalmia neonatorum.

Deaths.—In 126 great towns, including London, there was no death from smallpox or from enteric fever, 4 (0) from measles, 5 (1) from scarlet fever, 24 (4) from whooping-cough, 18 (3) from diphtheria, 41 (10) from diarrhœa and enteritis under two years, and 149 (26) from influenza. The figures in parentheses are those for London itself.

Birmingham reported 9 deaths from influenza; Leyton, West Ham and Rhondda each 5; no other great town more than 4. Deaths from diphtheria were scattered over 13 great towns, Liverpool reporting 3. West Bromwich had 2 deaths from measles, Birmingham 3 from whooping-cough.

The number of stillbirths notified during the week was 226 (corresponding to a rate of 41 per 1000 total births), including 38 in London.

LETTERS TO THE EDITOR

MENTAL NURSING

SIR,—Some of the suggestions in the letters by Drs. Kimber, Pilkington and Spencer, in your issues of March 11 and 25 and April 1 respectively, seem open to criticism.

The welfare of the patients in mental hospitals depends mainly on the fully trained staff and only to a lesser extent on the probationer nurses. The problem seems to be that of producing more efficient trained nurses, but the practical aspect must not be overlooked. It has been suggested that teaching of normal psychology from an earlier date in a probationer's career would add to this efficiency. Personally I doubt very much whether anything beyond a few introductory lectures on broad principles would be of advantage in the early stages of a mental nurse's training. Psychology is not an easy subject and is more easily grasped by those with some experience of patients in the wards.

Dr. Spencer's ideas for special training centres seem impracticable. Most mental hospitals have great difficulty in keeping their female staff up to quota. They have to attend some of the lectures during their hours on duty, and the difficulty is to spare them from the wards for the lectures being given already, let alone additional ones. Has Dr. Spencer considered how many probationer nurses, especially women, fail to qualify, or having qualified leave soon after? It is obviously impossible to afford the luxury of letting them spend the first six months of their all too short careers at the occupational centre and lectures, to the exclusion of all ward work.

Practical points that seem to me of importance in mental nursing reform are:—

1. A short general introductory course at the beginning of each series of lectures for the preliminary examinations.
2. Insistence that before qualifying each nurse shall produce a certificate to say that she has attended a fixed number of months in each type of ward—i.e., open, chronic, refractory, epileptic and infirmary wards—and at the occupational centre.
3. Prohibition of the allocation of probationer nurses starting their careers to refractory wards.
4. Concentration of nurses specially picked for their ability to establish contact with patients in the admission wards.
5. Opportunity for each qualified nurse to specialise in some useful sideline such as chiropody or physical-culture instruction.

I am, Sir, yours faithfully,

DONALD BLAIR.

Cane Hill Hospital, Coulsdon, Surrey, April 15.

INTUSSUSCEPTION

SIR,—Mr. Ian Fraser, in his account of a case of recurrent intussusception in a young child, published in your issue of April 15, remarks with much truth that "the subject of enlarged glands in intussusception is of great interest" and questions whether the enlargement be primary or secondary and whether it may be tuberculous. Some light might be shed on this problem by removal and microscopical examination of these glands; but, failing such information, certain clinical impressions may be noted.

In the first place, cases of intussusception usually come to operation within a few hours of the onset, and it is difficult to conceive that the degree of enlargement of the glands which is frequently seen can have arisen in so short a time as a secondary effect of the intussusception. As regards Mr. Fraser's query as to the possibility of the enlargement being due to tuberculosis, I have not observed any evidence of caseation in the affected glands, nor have I seen any other signs of intra-abdominal tuberculosis in any of these cases. My own impression is that the glands are the site of a simple inflammatory enlargement due to an acute enteritis, which causes colicky contractions of the bowel, which are the exciting cause of the intussusception.

I have frequently observed the relaxed stools typical of infantile diarrhœa during the days immediately following the reduction of an intussusception, and neither this nor the enlargement of the glands appears to be characteristic of ordinary intestinal strangulation with which intussusception is closely comparable in its mechanical effects on the bowel. If, as I believe, intussusception in infants is caused in many instances by an attack of enteritis, the recurrence of the condition in subsequent attacks of enteritis would be a reasonable expectation. The matter is one which is difficult to prove conclusively, but the usual coincidence of the age-periods of enteritis and of intussusception seems to lend some support to my contentions. It would be interesting to know if Mr. Fraser or any of your readers has made any observations on this problem.

I am, Sir, yours faithfully,

FRANK FORTY.

Redhill County Hospital, Edgware, April 17.

LIFE-STORY OF SIMPLE HERPES

SIR,—I was interested in the leading article on this subject in *The Lancet* of March 18 and also in Dr. Edwin Goodall's letter in your last issue. The latter presents certain statements from a contribution by Naegeli (*Münchener Medizinische Wochenschrift* of Feb. 28, 1936) which, if substantiated by adequate clinical and experimental investigation, might constitute an addition to the present treatment of neurosyphilis. If the previous inoculation of herpes virus is proved to increase the efficacy of the malarial therapy of neurosyphilis an advance of some value would be achieved.

The determination of the incidence of simple herpes in cases of neurosyphilis undergoing malarial therapy is an easy matter of clinical observation. After a considerable experience Dr. Goodall has the impression that the incidence is small and my own more limited experience is in agreement with this view. Through the kindness of Dr. L. Findlay, the medical superintendent, I have reviewed my own notes on forty-two cases of neurosyphilis treated by malaria in the V.D. wards of Mill Road Infirmary, Liverpool. All cases were inoculated with the benign tertian parasite except for one in which quartan malaria was used. Two cases developed simple herpes after the second and third rigors respectively and a third case developed herpes two days after the exhibition of quinine. The incidence in this small series is thus 7 per cent., and it is interesting to note that the herpes was confined to cases of taboparesis and was not met with in cases of pure general paralysis although the latter constituted half of the series. One case of asymptomatic general paralysis had an attack of simple herpes a week before inoculation with malaria, and although parasites were seen in blood films no fever developed. This group of patients

belonged to the "hospital class" and appears to have contained fewer carriers of herpes virus than the experience of Burnet and Lush (*Lancet*, March 18, p. 629) would lead one to expect. If the incidence of herpes carriers is really lower in this group of cases of neurosyphilis than in the general population, does not this support Naegeli's reported contention that herpetics exhibit neurosyphilis more rarely than non-herpetics?

It is often difficult to judge the success or otherwise of malarial therapy in neurosyphilis, as the date and extent of recovery varies within such wide limits. It will therefore be equally difficult to assess any increased success which might be attributable to an intercurrent attack of herpes simplex, and my own series of cases can offer no evidence on this point. The whole problem, however, merits further study and may eventually lead to the estimation of herpes antibody proving of prognostic value in syphilis and the establishment of inoculation of herpes virus as a useful preliminary to the malarial therapy of neurosyphilis.

I am, Sir, yours faithfully,

Stoke-on-Trent, April 15. SYDNEY M. LAIRD.

STERNAL PUNCTURE IN KALA-AZAR

SIR,—In the annual report of the Calcutta School of Tropical Medicine for 1937 (issued early in 1938) I reported my experience with sternal puncture as a method of diagnosis in kala-azar. Leishmania were found in 18 out of 27 cases of kala-azar in the puncture material, but I pointed out that no particular search was made for leishmania in some of the earlier smears, and I added "It seems probable that one may expect to find leishmania in 80 to 90 per cent. of cases of kala-azar; the procedure offers an alternative method of diagnosis for those who are prejudiced against spleen puncture."

This expresses my opinion exactly at the present day, after another year's experience. I find that I have now done 63 sternal punctures in kala-azar cases, in 44 of which leishmania were found. If we exclude the first 5 punctures in which no particular search was made for leishmania, as the cytology was the main interest, and 3 others in which some treatment had already been given, the negative findings are reduced to 11, or 20 per cent. In 9 of the 11 negative cases parasites were found in the splenic puncture smears, and in the other 2 cases the smears were also negative but cultures were positive.

The fact that in 9 cases splenic puncture showed parasites and sternal puncture none is, of course, no proof that the former is a superior method, but from many years' experience I know that, in untreated kala-azar, splenic puncture gives a higher percentage of positives than 80, and I have estimated the proportion from time to time as about 95 per cent. Further, in the sternal puncture smears there are always far fewer parasites per field than in splenic punctures from the same case. A criticism of this might be that I always take between 1 and 2 c.cm. of fluid from the sternum; this entails a considerable dilution of the pure marrow fluid.

Of the writers you quote in your annotation of Jan. 7 (p. 37), Schretzenmayr and Lancaster only refer to 6 cases. Chung, on the other hand, diagnosed 171 cases of kala-azar by this method, but does not give any figures for negative findings. You mention that Chung has made 350 punctures altogether, but we must assume that these were not all cases of kala-azar. To avoid conveying a one-sided impression, your reference to Giraud and Gaubert, who seem to have been unfortunate in their experience with splenic puncture, might have been accompanied by some reference to my paper on this subject in THE LANCET (1936, **2**, 126) in which I mentioned that I had myself done well over 5000 splenic punctures in 15 years without any serious effects. (I might add that these punctures were done at a large teaching institution where I should not be allowed to forget any deaths that could have been attributed directly or indirectly to splenic puncture.)

I entirely agree that sternal puncture has given us another fairly accurate means of making a diagnosis in kala-azar. It is one that in many circumstances may be the method of choice, but your annotation rather conveys the impression that it is as reliable a method as splenic puncture and might replace it. This has not yet been proven.

I am, Sir, yours faithfully,

L. EVERARD NAPIER.

Calcutta School of Tropical Medicine, April 5.

ILLNESS IN SMALLPOX CONTACTS

SIR,—The events following the introduction of a case of variola major from India in 1938 described by Dr. E. T. Conybeare in your issue of April 8 are of great interest and importance for they seem to indicate that a virulent strain of variola can do two things: (1) produce illness in vaccinated persons, and (2) spread without any evidence of direct contact. With regard to the first point, in 1927 an outbreak of mild smallpox occurred at Dundee and mixed crusts from the cases were sent by Prof. Tulloch through me to Prof. G. Sobernheim of Berne, who succeeded by rabbit passage in raising from them a very virulent strain of vaccinia, the M4 strain. It would have been interesting to know if the strain of variola concerned in the present case did the same thing, and should any further cases of variola major occur it would be worth while to preserve some of the crusts (readily collected by the nurse who makes the beds) and get them tested in the same way. It is conceivable that there may be different types among the more virulent strains of variola, and that the best protection against some of them is by a homologous strain of vaccinia. A further point with regard to anomalous cases of illness, possibly a modified form of variola, is that through the experimental work of recent years serological tests are now available for recognising smallpox infection, and in Scotland valuable information has been obtained by their application.

With regard to the spread of virulent smallpox in the acute stage without evidence of direct contact, the supplement to the report of the Local Government Board for 1880–81 on the "Use and Influence of Hospitals for Infectious Diseases" contains a report by the late Sir William Power on the influence of Fulham smallpox hospital on the neighbourhood surrounding it, where the spread of smallpox without direct contact is fully described and illustrated by maps. This spread seems only to have occurred when the hospital contained cases in the acute stage. During 5 epidemic periods the incidence on the surrounding population varied inversely with the distance from the hospital, the aggregate incidence per 100 houses being within ¼ mile 17·35, within ¼–½ mile 9·20, ½–¾ mile 6·16, and ¾–1 mile 2·57. It would be interesting to know the distribution in this sense of the non-contact cases infected in the outbreak described by Mellows and Conybeare.

I am Sir, yours faithfully,

East Molesey, Surrey, April 16. M. H. GORDON

INFECTIVITY PERIOD OF CATARRHAL JAUNDICE

SIR,—Many will have read with appreciation the review of epidemic catarrhal jaundice contributed by Dr. W. N. Pickles on April 15 to your series, the Control of the Common Fevers.

Dr. Pickles states that the period of infectivity of this disease is a short one, and mentions evidence which shows that it is infectious before appearance of the symptoms. But it is difficult, he says, to fix how long the infectious period persists after the development of symptoms, and he adds that he has been successful in acting on the assumption that *isolation for a fortnight is sufficient*. Most clinicians, however, proceed on a different assumption—namely, that after the appearance of the jaundice (usually about the fourth or fifth day) the patient is no longer infectious. This is supported by the observation that secondary cases do not occur in hospital wards. In considering this evidence allowance must be made for the long incubation period of about one month which would allow of many of the contacts being discharged before the end of the period. Yet it is a very usual practice to admit catarrhal jaundice patients into open hospital wards, and I have seen many of these patients admitted to children's wards within 24–48 hours after the appearance of the jaundice; I do not remember any secondary cases in the wards or reports of them having developed after a child's discharge. If this is true, there is no need to arrange cubicle- or bed-isolation when such patients are admitted to hospital or to isolate a patient at home after the appearance of his jaundice.

On the other hand secondary cases are not unusual among the staff of institutions and in schools, and these facts suggest that the infectious period of epidemic catarrhal jaundice is in the prodromal stage before the jaundice appears.

I am, Sir, yours faithfully,

REGINALD LIGHTWOOD.

Brook Street, W.1, April 18.

HISTAMINE AND URTICARIA

SIR,—In view of the theory that urticarial rashes are caused by histamine the following case may be of interest.

On March 31 the patient was given ionisation of histamine to the right elbow. On April 5 some histamine ointment was accidentally rubbed into a cut and half an hour later an urticarial rash appeared on the elbow, corresponding to the area ionised. There was some malaise till April 8, when a generalised urticaria, similar to that on the elbow, developed; and on the following day there was painful swelling of the ankles and wrists. On the 10th there was intense headache, but by the evening improvement commenced and it has since been steady though slow. The treatment used was the administration of salicylates. The highest temperature recorded was 101·5° F.

I am, Sir, yours faithfully,

H. N. HORNIBROOK.

Gerrards Cross, Bucks, April 16.

PUBLIC HEALTH

A New Waterworks Code

MODERNISATION of the law of water-supply is recommended in the second report of the Central Advisory Water Committee (Cmd. 5986. H.M. Stationery Office. 1*s*.). Parts of the existing law are nearly a century old, and it would be surprising if the statutes of 1847 and 1863 were nowadays incapable of improvement. The committee not only urges that legislation for this purpose should be introduced at the first practicable opportunity; it also actually produces in a companion blue-book (Cmd. 5987. 1*s*. 3*d*.) a draft Water Undertakings Bill to form the proposed new code. The bill is the work of a subcommittee which included two expert draftsmen, Sir Frederick Liddell and Mr. G. R. Hill. It is a further modest step in the excellent progress which, in the past six years, has given us new codes of local government, public health and food and drugs law.

The proposed changes in the law of water-supply are devised to enable water undertakers to obtain reasonably uniform powers at less expense and by less cumbrous procedure than heretofore. Among specific proposals the bill contains clauses to prevent pollution to underground sources. Section 61 of the 1847 act contained the old prohibitions on bathing in reservoirs, streams or waterworks, on allowing animals to be washed therein and on causing sinks, sewers or drains to foul the supply directly. There was no protection against the placing of polluting matter in the subsoil near springs or underground sources. As the subcommittee observes, modern transport facilities attract large numbers of persons to areas formerly remote and encourage building development, without adequate facilities for sewage disposal, in places hitherto agricultural in character.

Another change suggested concerns the vexed question of "domestic supply." Formerly it was common to allow additional charges for water-closets and baths as if these were exotic luxuries for which the rich should be taxed. Section 126 (3) of the Public Health Act of 1936 allowed no additional charge for any fixed bath of ordinary capacity. The new bill moves along the same lines, seeking to indicate what purposes may be considered domestic instead of excluding defined purposes from the scope of the domestic rate. Only a few weeks ago our columns recorded litigation over the use by a doctor of water supplied to a tap in his surgery. The bill, we observe, will end this difficulty by allowing no additional charge for water used in a private house where part of the house is used for professional purposes.

One other proposal may be mentioned. The old law has allowed water companies to cut off water on all sorts of grounds—not only if the consumer has failed to pay his water-rate but also if an authorised officer is refused entry for the purpose of examining whether there is waste or misuse, and so on. These grounds were formulated before the significance of water-supply in relation to public health was fully appreciated. It is nowadays realised that to cut off water, and consequently to cause failure of sanitary arrangements, is a step which may well injure the health of persons in the house concerned who are in no way responsible for the technical offences committed. The bill proposes that all such offences shall be dealt with by fine and that the only justification for cutting off water shall be the consumer's failure to pay his rates and charges.

These instances show that the proposals are part of an enlightened policy. If the bill goes forward, its operation may present certain difficulties at the

outset. The abolition of additional charges for water-closets and baths will place a heavy burden on water companies in some areas. It may be impracticable to revise water-rates without increasing the rates of small houses which will often not benefit by the remission of the additional charges. The bill contemplates that the new waterworks code shall be brought into operation locally by order of the Minister of Health after the undertakings have had a reasonable chance to review the circumstances. Sympathetically administered, the new proposals should be of great service to the community.

MEDICAL NEWS

Royal College of Surgeons of England

A meeting of the council was held on April 13 with Mr. Hugh Lett, the president, in the chair. Sir Arthur MacNalty and Mr. H. M. Evans were elected fellows under the charter which permits the council to elect annually to the fellowship, without examination, two members of the college of twenty years' standing.

Mr. E. S. J. King, of Melbourne, was awarded the Jacksonian prize for 1938 for his dissertation on surgery of the heart; this is the third occasion on which the prize has been awarded to Mr. King. Mr. Laurence O'Shaughnessy was awarded a certificate of honourable mention for his essay on the same subject. The subject for the prize for 1940 will be the surgical treatment of pain. Mr. H. A. Buck (Guy's Hospital) was appointed Begley student for the next three years.

It was decided that a primary examination for the fellowship should be held in India and Egypt in 1940. The following hospitals were recognised for the six months' surgical training required of candidates for the final examination for the fellowship:—

Royal Devon and Exeter Hospital, Exeter (resident surgical officer); Royal Victoria Hospital, Folkestone (senior house surgeon); County Hospital, Kingston (junior surgical officer).

A diploma of fellowship was granted to Stanley Aubrey Jenkins (Cardiff). Diplomas in anæsthetics were granted, jointly with the Royal College of Physicians, to C. G. Bryan, Geoffrey Kaye, and H. R. Youngman; and diplomas in child health to the candidates named in our issue of April 8 in the report of the meeting of the Royal College of Physicians.

Pathological Research in its Relation to Medicine

Our advertisement columns contain particulars of a course of lectures on this subject to be given in the institute of pathology and research at St. Mary's Hospital at 5 P.M., on Tuesdays from April 25 to June 13. The first lecture was to have been given by Prof. Wilfred Trotter, F.R.S., but this has been postponed, and instead Sir Almroth Wright, F.R.S., will speak on fifty years of bacteriological work. Other speakers will be Dr. Wilson Smith, Dr. V. D. Allison, Mr. A. S. Parkes, F.R.S., Prof. Edgar Adrian, M.D., Mr. Joseph Needham, Sc.D., Prof. J. R. Marrack, M.D., and Sir John Orr, F.R.S. The lectures are open to all members of the medical profession.

British Postgraduate Medical School

Three lectures on cancer will be given in the department of pathology of the school by Prof. James McIntosh on April 26 and May 3 and 10 at 4.30 P.M. Three lectures on toxic goitre will be given in the department of surgery by Mr. Cecil Joll on May 5, 12, and 19 at 2.30 P.M. Applications for tickets should be made to the dean of the school, Ducane Road, London, W.12.

Francis Amory Septennial Prize

Under the will of the late Francis Amory of Beverly, Massachusetts, the American Academy of Arts and Sciences administers a fund to provide a septennial prize for outstanding contributions to knowledge, "through experiment, study or otherwise . . . in the diseases of the human sexual generative organs in general," during the seven years preceding the award. If there is work of a quality to warrant it, the first award will be made in 1940. The total amount of the prize will exceed 10,000 dollars, and may be given in one or more awards. While there will be no formal nominations, and no formal essays or treatises will be required, the committee invites suggestions, which should be made to the Amory Fund Committee, care of the American Academy of Arts and Sciences, 28, Newbury Street, Boston, Massachusetts, U.S.A.

Frederick Price Lectureship

Lord Horder will deliver the first Frederick Price lecture in the hall of the Royal College of Physicians of Edinburgh on Monday, May 15, at 5 P.M. The subject of the lecture is the control of disease.

The Heberden Medal

This medal has been awarded to Dr. Ernest Fletcher for his work on osteo-arthritis and its association with obesity and hypertension, and he will deliver the Heberden lecture on Tuesday, May 16, at 8.30 P.M., at 11, Chandos Street, London, W.1. All medical practitioners who are interested are invited to attend.

Postgraduate Lectures at Edinburgh

In conjunction with the course in clinical surgery, which is being held during the summer term, four Honyman-Gillespie lectures will be given at the Royal Infirmary on Thursdays at 4.40 P.M. On May 11 Mr. J. J. M. Shaw will speak on cancer of the mouth and jaws; on May 25, Mr. J. M. Graham on surgical aspects of the treatment of toxic goitre; on June 8, Miss Gertrude Herzfeld on the acute abdomen in childhood; on June 22, Mr. C. F. W. Illingworth on the surgical treatment of obstructive jaundice. The lectures will be open to all graduates.

College of Nursing on Proposed Changes

At a special meeting held on April 13 to discuss the interim report of the Interdepartmental Committee on the Nursing Services the council of the College of Nursing commended the general lines of the report, which is largely in accord with college policy. The report was criticised for paying too much attention to ways of attracting the elementary-school girl and not enough to recruiting the girl of higher education. The college supports the suggestions put forward for the recognition of the "assistant nurse" and the control of her activities, provided that legislation will prevent persons other than state-registered nurses or assistant nurses entered on the roll from nursing the sick habitually and for gain. The college objects to the legalisation of the title "assistant nurse" and urges the adoption of the title "approved invalid attendant" for those placed on the proposed roll. Instead of setting up a committee on the lines of a Burnham committee to deal with salaries alone the appointment of national and regional councils to devise the most suitable machinery for this purpose is advised. The college suggests that the principle of state grants for nursing education might be extended to include post-certificate education, especially in view of the present shortage of sister tutors who, if suitably qualified, should be included among possible instructors in anatomy, physiology, and hygiene in schools and polytechnics.

THE LANCET 100 YEARS AGO

April 20, 1839, *p.* 175.

From the report of an inquest on a stoker.

The House-surgeon stated that he thought the case was very mysterious, although there was no appearance of poison. The stomach was greatly swollen, and there were slight marks of inflammation. He gave it as his opinion that the death might have been occasioned by drinking the cold beer when in a state of perspiration.

The Coroner remarked that it was a surprising thing that he himself had not fallen a victim to the drinking of cold beer, of which he was particularly fond. He had, on one occasion, eaten two red herrings previous to a row up to Battersea, against tide, for the purpose of giving him a relish for cold beer.

Medical Diary

April 24 to April 30

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole Street, W.1.

MONDAY.

Odontology. 8 P.M., Prof. Robert Bradlaw: The Histology and Histopathology of the Dental Innervation. Dr. D. Stewart and Dr. W. Lewinsky: A Comparative Study of the Innervation of the Gums.

TUESDAY.

Medicine. 4 P.M., clinical meeting at Guy's Hospital, S.E.1. 5.45 P.M., Sir Arthur Hurst: Regional Ileitis with Fistula Formation. Radiograms illustrating disorders at the lower end of the œsophagus.

WEDNESDAY.

Clinical. 4.30 P.M., demonstration of cases.

Pathology. 8.30 P.M., Dr. H. E. Robertson (Mayo Clinic): The Significance of Residual Lesions of the Stomach.

THURSDAY.

Neurology. 5 P.M., clinical meeting at the National Hospital, Queen Square, W.C.1.

Urology. 8.30 P.M., clinico-pathological meeting.

FRIDAY.

Physical Medicine. 2.30 P.M. (London Hospital, E.1), annual meeting. Lantern demonstration of Calcifying Bursitis and Tendonitis. Demonstration of Hyperpyrexial Treatment with the Kettering Hypertherm.

Disease in Children. 5 P.M. (cases at 4.15 P.M.), Dr. F. B. Parsons: Familial Hepatitis.

Epidemiology and State Medicine. 8.15 P.M., Mr. G. L. Pepler: Town- and Country-planning.

ST. JOHN'S HOSPITAL DERMATOLOGICAL SOCIETY, Lisle Street, W.C.2.

WEDNESDAY.—4.30 P.M., clinical cases. 5 P.M., Dr. J. D. Rolleston: Dermatology and Folk-Lore.

MEDICO-LEGAL SOCIETY.

THURSDAY.—8.30 P.M. (26, Portland Place, W.1), Sir Ambrose Woodall: The British Workmen's Compensation Acts.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

NATIONAL CONFERENCE ON NUTRITION, B.M.A. House, Tavistock Square, W.C.1.

THURSDAY.—10 A.M., Sir Arthur Salter, M.P.: inaugural address. 11 A.M., Prof. E. P. Cathcart, F.R.S.: Medical Aspects of Nutrition. Major-General Sir Robert McCarrison, Dr. G. P. Crowden, and Dr. G. C. M. M'Gonigle will also speak. 2.30 P.M., Lord Astor: Means of Stimulating Production (A), Home Agriculture.

FRIDAY.—10 A.M., Mr. F. L. McDougall: Means of Stimulating Production (B), Overseas Producers. Noon, Mr. L. S. Amery, M.P.: Means of Stimulating Consumption (A), Family Allowances; Provision of Cheap or Free Milk or Meals. Mr. L. J. Cadbury, Sir Kenneth Lee, Mr. George Gibson, and Dr. Stella Churchill will also speak.

SATURDAY.—10 A.M., Mr. W. O. Lester Smith: Means of Stimulating Consumption (B), Education. Prof. Mottram and Mrs. Henry Haldane will also speak.

BRITISH MEDICAL ASSOCIATION, B.M.A. House, Tavistock Square, W.C.1.

FRIDAY.—8.15 P.M., Prof. V. H. Mottram: Nutrition and the Public Health. (Sir Charles Hastings lecture.)

UNIVERSITY OF LONDON.

WEDNESDAY.—5 P.M. (University College, Gower Street, W.C.1), Dr. A. Hrdlicka (Washington): The Present Status of our Views on Human Evolution.

FRIDAY.—5 P.M., Dr. Hrdlicka: The Racial Fallacies and Realities of European Peoples.

UNIVERSITY OF GLASGOW.

TUESDAY.—8.15 P.M. (Tennent Memorial Institute, Church Street), Prof. Emile de Grósz (Budapest): The Surgery of the Eye in Hungary.

TAVISTOCK CLINIC, Malet Place, W.C.1.

MONDAY.—6 P.M., Dr. Emanuel Miller: Neurotic Symptoms and Primitive Thoughts (II).

WEDNESDAY.—3 P.M., Dr. Cedric Shaw: The Allergic Diseases. 4.30 P.M., Dr. H. Crichton-Miller: Asthma.

THURSDAY.—6 P.M., Dr. Curt Boenheim: Psychological Characteristics of the Pre-school Child.

INSTITUTE OF PSYCHO-ANALYSIS, 96, Gloucester Place, W.1.

TUESDAY.—8.30 P.M., Mr. Ernst Kris: Growth of Group Feeling.

BRITISH POSTGRADUATE MEDICAL SCHOOL, Ducane Road, W.12.

TUESDAY.—4.30 P.M., Dr. C. M. Hinds Howell: Syphilis of the Nervous System.

WEDNESDAY.—Noon, clinical and pathological conference (medical). 2 P.M., Dr. T. C. Stamp: The Bacteriological Diagnosis of Tuberculosis. 3 P.M., clinical and pathological conference (surgical). 4.30 P.M., Prof. J. McIntosh: Cancer.

THURSDAY.—2.15 P.M., Dr. Duncan White: radiological demonstration. 3.30 P.M., Mr. Victor Bonney: Genital Prolapse.

FRIDAY.—2 P.M., clinical and pathological conference (obstetrics and gynæcology). 2.30 P.M., Mr. H. A. T. Fairbank: Generalised Diseases of Bone.

Daily, 10 A.M. to 4 P.M., medical clinics, surgical clinics and operations, obstetrical and gynæcological clinics and operations.

ST. MARY'S HOSPITAL, W.2.

TUESDAY.—5 P.M. (Institute of Pathology and Research), Sir Almroth Wright, F.R.S.: Fifty years of Bacteriological Work.

HOSPITAL FOR SICK CHILDREN, Great Ormond Street, W.C.1.

THURSDAY.—2 P.M., Dr. R. T. Brain: Common Diseases of the Skin and their Treatment. 3 P.M., Dr. Alan Moncrieff: Nephritis in Children.

Outpatient clinics daily at 10 A.M. and ward visits at 2 P.M.

WESTMINSTER HOSPITAL, Horseferry Road, S.W.1.

TUESDAY.—5 P.M., Dr. Hildred Carlill: Wernicke Encephalopathy. Dr. Donald Paterson: Pneumococcal Meningitis.

MAIDA VALE HOSPITAL FOR NERVOUS DISEASES, W.9.

THURSDAY.—3 P.M., Dr. S. Nevin: clinical demonstration.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole Street, W.1.

MONDAY to SUNDAY.—MAUDSLEY HOSPITAL, Denmark Hill, S.E.5, afternoon course in psychological medicine.—PLASTIC SURGERY, Wed. and Thurs. at various hospitals.—BROMPTON HOSPITAL, S.W.3, Tues. and Fri., 5.15 P.M., M.R.C.P. course in chest diseases.—MEDICAL SOCIETY OF LONDON, 11, Chandos Street, W.1., Mon., Wed., and Fri., 5.15 P.M., primary F.R.C.S. physiology course.—PRINCESS BEATRICE HOSPITAL, Richmond Road, S.W.5, Sat. and Sun. course in general surgery.

MANCHESTER ROYAL INFIRMARY.

FRIDAY.—4.15 P.M., Dr. E. W. Twining: radiological demonstration.

Appointments

DAVIDSON, W. C., M.B. Glasg., hon. physician to the Torbay Hospital, Torquay.

*DICK, T. B. S., M.B. Manc., resident assistant medical officer at Withington Hospital, Manchester.

GRAY, CHARLES, M.B. Manc., F.R.C.S., second orthopædic surgeon to the Victoria Hospital for Children, London.

GREIG, M. T., M.B. N.Z., casualty medical officer at the West Middlesex County Hospital, Isleworth.

HAGGAR, N. J., M.R.C.S., assistant medical officer at the Bucks Mental Hospital, Stone, near Aylesbury.

HUNTER, T. M., M.D. Glasg., D.P.H., medical officer of health for Clydebank.

KERSLAKE, DOROTHEA, M.R.C.S., assistant medical officer of health for York.

LEDERMAN, MANUEL, M.B. Lond., D.M.R.E., radium therapist at the Royal Cancer Hospital (Free), London.

MCELLIGOTT, G. L. M., M.A. Oxfd, M.R.C.S., assistant deputy to the coroner for the County of London (western district).

MACKAY, J. D., M.B. Aberd., D.P.H., temporary assistant medical officer, air-raid precautions, for Rotherham.

MACLAREN, KATHLEEN M., L.R.C.P., pathological registrar at the Royal Northern Hospital, London.

MASON, F. C., M.S. Lond., F.R.C.S., visiting ear, nose, and throat surgeon at the West Middlesex County Hospital, Isleworth.

OOSTHUIZEN, S. F., M.B. Cape Town, M.R.C.P.E., D.M.R., assistant radiologist at the Royal Cancer Hospital (Free) London.

PINKERTON, M.C., M.B. Edin., casualty medical officer at the Redhill County Hospital, Edgware.

SCOTT, P. M., M.B. Edin., divisional police surgeon for Hull.

SHEEHAN, BRENDAN, M.B. Manc., D.O.M.S., school medical inspector for Cornwall.

WAUCHOPE, GLADYS M., M.D. Lond., M.R.C.P., hon. medical registrar to the Royal Sussex County Hospital, Brighton.

Royal Waterloo Hospital for Children and Women, London.—The following appointments are announced:—

UNGLEY, H. G., M.D. Durh., F.R.C.S., hon. surgical registrar; DEVILLE, P. M., M.R.C.P., hon. medical registrar; and MURLESS, B. C., M.B. Camb., F.R.C.S.E., M.R.C.O.G., hon. gynæcological registrar.

Vacancies

For further information refer to the advertisement columns

Altrincham General Hosp.—Sen. and jun. H.S.'s, at rate of £150 and £120 respectively.

Birmingham, Royal Cripples' Hosp.—Res. H.S., at rate of £200.

Birmingham, Selly Oak Hosp.—Jun. M.O.'s, each at rate of £200.

Birmingham and Midland Eye Hosp.—Res. surg. O., £200.

Bolton, Borough Isolation Hosp.—Res. asst. M.O., £450.

Boston General Hosp.—Res. M.O., at rate of £150.

Bristol Eye Hosp.—Sen. res. H.S., at rate of £150.

Buckinghamshire County Council.—Deputy county M.O.H. and school M.O., £750.

Camberwell House Mental Hosp., S.E.5.—Second asst. M.O., £350.

Cambridge, Addenbrooke's Hosp.—Res. surg. O., £225.

Cardiff, Welsh National School of Medicine.—Two jun. assts. in medical unit, each £300.

Central London Throat, Nose, and Ear Hosp., Gray's Inn Road, W.C.1.—Two asst. surgeons. Also hon. assts. in out-patient department.

Charterhouse Rheumatism Clinic, 56/60, Weymouth Street, W.1.—Hon. clin. assts.

Chesterfield and North Derbyshire Royal Hosp.—H.S. to ophth. and ear, nose and throat dept., and H.P., each at rate of £150.

* Subject to confirmation.

Chichester, Graylingwell Hosp.—Deputy med. supt., £700.
Coventry and Warwickshire Hosp.—Three H.S.'s to special depts., each at rate of £150.
Croydon General Hosp.—Hon. asst. to surgeon in charge of the urological and proctological dept. Also two hon. asst. surgeons.
Exeter, Wonford House Registered Hosp.—Asst. M.O., £350.
Gloucester, Barnwood House Hosp. for Mental and Nervous Disorders.—Second asst. M.O., £450.
Halifax Royal Infirmary.—First H.S., at rate of £200.
Hastings, Royal East Sussex Hosp.—Sen. H.S., at rate of £200.
Hertford County Hosp.—Hon. asst. surgeon.
*Hosp. for Sick Children, Great Ormond Street, W.C.*1.—Out-patient med. reg., £150.
Ipswich, East Suffolk and Ipswich Hosp.—Res. surg. O., £400 single man, £550 married man.
Kent County.—Two asst. county M.O.H.'s, each £700.
*King Edward Memorial Hosp., Ealing, W.*13.—Cas. O. and H.S., at rate of £150.
*King's College Hosp., Denmark Hill, S.E.*5.—Asst. physician to diabetic dept.
Lancashire County Council.—Asst. county M.O., £800. Also jun. H.S. at Biddulph Grange Orthopædic Hosp., at rate of £200.
Lancaster, Royal Albert Institution for the Feeble-minded.—Res. jun. asst. M.O., £375.
Leeds City.—Asst. to the M.O.H., £600.
Leicester Royal Infirmary.—Res. radiologist, at rate of £200.
Lincolnshire Joint Board for the Mentally Defective.—Asst. M.O., £350.
Liverpool, Smithdown Road Hosp.—Res. asst. M.O., £200.
London County Council.—Asst. M.O., Class I, £350. Also asst. M.O., Class II, £250.
London Lock Hosp., 283, *Harrow Road, W.*9.—Res. M.O. to all depts., at rate of £175.
London University.—University chair of obstetrics and gynæcology, £2000.
Manchester, Monsall Hosp. for Infectious Diseases.—Jun. res. asst. M.O., at rate of £250.
Manchester, Withington Hosp.—Deputy med. supt., £600.
Manchester City Education Committee.—School M.O., £1000.
Manchester Ear Hosp., Grosvenor Square, All Saints'.—Visiting anæsthetist.
Manchester Royal Children's Hosp., Pendlebury.—Asst. surgeon, £50.
Middlesbrough, North Riding Infirmary.—H.P., at rate of £140.
Middlesex County Council.—Asst. M.O. for public health and school medical department, £600. Also asst. M.O. for Redhill County Hosp., £400.
*National Dental Hosp., Great Portland Street, W.*1.—Hon. dental surgeon.
Newcastle-upon-Tyne, King's College.—Asst. bacteriologist in public health laboratory, £400.
Norwich, Norfolk and Norwich Hosp.—H.S. to spec. depts., £160. Also cas. O., £120.
Nottingham, Mapperley Hosp.—Locum tenens M.O., 7 guineas per week.
Nottingham, The Coppice.—Locum, 7 guineas weekly.
*Paddington Green Children's Hosp., W.*2.—Hon. radiologist.
Pontefract General Hosp., &c.—Jun. res. M.O., at rate of £150.
*Prince of Wales's General Hosp., N.*15.—Hon. officer to speech-therapy and lip-reading dept. Also hon. dental surgeon.
*Princess Beatrice Hosp., Earl's Court, S.W.*5.—Hon. asst. surgeon to ophth. dept.
*Princess Elizabeth of York Hosp. for Children, Shadwell, E.*1.—Hon. neurological surgeon.
Public Schools Exploring Society.—Hon. surgeon for Newfoundland Expedition.
*Putney Hosp., Lower Common, S.W.*15.—Hon. physician. Also res. M.O., £150.
Reading Royal Berkshire Hosp.—Surg. reg.
Redhill, Surrey, Royal Earlswood Institution.—Jun. asst. M.O., £350.
Rotherham Hosp.—H.P., £180.
Royal Naval Medical Service.—M.O.'s.
*Royal Northern Hosp., Holloway, N.*7.—Consulting physicist.
*Royal Waterloo Hosp. for Children and Women, Waterloo Road, S.E.*1.—Res. M.O., at rate of £150. Also H.P. and H.S., each at rate of £100.
Salop County Council.—Deputy county M.O.H. &c., £700. Also asst. M.O.H., &c., £600.
*Samaritan Free Hosp. for Women, Marylebone Road, N.W.*1.—H.S., at rate of £100.
Sheffield Children's Hosp.—H.S., at rate of £100.
Shoreditch Metropolitan Borough.—Asst. M.O.H., £650.
Slough Borough, &c.—Deputy M.O.H. and deputy M.O. of hosp., £500.
Stafford, Staffordshire General Infirmary.—H.S. and H.P., at rate of £175 and £150 respectively
Torquay, Torbay Hosp.—Hon. physician in charge of outpatients.
Virginia Water, Surrey, Holloway Sanatorium.—Jun. asst. M.O., £350.
Wembley Borough.—Asst. M.O.H., £500.
*West London Hosp., Hammersmith, W.*6.—Children's outpatient M.O., at rate of £150. Also res. anæsthetist, at rate of £100.
*Westminster Hosp., Broad Sanctuary, S.W.*1—Chief asst. and registrar to electrical and irradiation unit, £250. Part-time chief asst. and registrar to radiological department, £150. Also additional offices from £100 to £350.
West Sussex County Council.—Asst. county M.O.H. and district M.O.H., £800.
Wolverhampton Royal Hosp.—H.S. to fracture and orthopædic department, at rate of £100.
*Woolwich and District War Memorial Hosp., Shooters Hill, S.E.*18. H.P., at rate of £100.

The Chief Inspector of Factories announces vacancies for Examining Factory Surgeons at Bothwell (Lanark) and Nelson (Glamorgan).

Births, Marriages and Deaths

BIRTHS

ASHKEN.—On April 11, at Stanmore, Middlesex, the wife of Dr. L. Handley Ashken—a daughter.
MOCKLER.—On April 14, at Welbeck Street, W.1, the wife of Surgeon Lieut.-Commander Edmond J. Mockler, R.N.—a daughter.
MORTON.—On April 11, at Brentwood, the wife of Dr. Richard Bertram Morton—a daughter.
SINCLAIR.—On April 16, at Lewes, the wife of Mr. C. Gordon Sinclair, F.R.C.S.—a son.

MARRIAGES

BECKETT—HAYNES.—On April 12, at St. Benet's Church, Cambridge, Francis George Archer Beckett, M.B., to Lucy Daville Haynes.
CAMPBELL—ERWIN.—On April 12, at Antrim, Robert Tait Campbell, M.B., Sudan Medical Service, to Lilian Winifred Erwin.
DUNCAN—HOLLIDAY.—On April 12, at St. Andrew's Parish Church, Penrith, Archibald Sutherland Duncan, M.B., to Barbara Holliday.

DEATHS

BATES.—On April 17, at St. Albans, Henry Leslie Bates, M.R.C.S., aged 90.
SCOTT.—On April 12, at Wentworth, Virginia Water, Joseph Scott, M.B. Glasg.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

RUSSIAN WORK ON LYSOZYME

LYSOZYME was discovered and named by A. Fleming, who described it as " a ferment-like substance which has the power of killing and dissolving bacteria, and which is widely distributed throughout the body " (*Lancet*, 1929, **1**, 217). During the last six years it has been elaborately studied by Z. W. Yermoljeva and I. Bouianowskaja, who have found it in the tears, sputum, saliva, serum, plasma, leucocytes, ova, heart, liver, lungs, kidneys, and spleen of different animals (*Acta med. U.R.S.S.* 1938, **1**, 249). The tissues and body fluids of man, especially cartilage and tears, are, they say, very rich in it; indeed almost the only part of the human body that has none is the cerebrospinal fluid. According to this work in Moscow lysozyme acts equally well whether oxygen is present or not, and it lyses dead and living bacteria, whether saprophytic or pathogenic. There is, however, some specificity of action according to the provenance of the lysozyme. This extends the specificity found by Fleming, who isolated a coccus (*Micrococcus lysodeikticus*) so sensitive to the action of lysozyme that he used it to detect the presence of the enzyme. As long ago as 1931 Yermoljeva and Bouianowskaja used lysozyme in the treatment of various affections of the ear, nose, and throat, and in the laboratory it is said to have proved efficacious in the treatment of keratomalacia in rats and of various diseases of skin, cornea, and conjunctiva in rabbits. It was found to stimulate cicatrisation and reabsorption, and Fradkin and Beketovsky are stated to have used it with success for serpiginous ulcer of the cornea. In surgical work Yermoljeva and Bouianowskaja have employed it instead of antiseptics.

" . . . It is commonly said that the pace of life has increased, and that there is a greater strain upon the nervous system of the modern man and woman. If this be so, how can it be explained ? One important reason is probably the development of the internal combustion engine, which Philip Gibbs regards as 'the most destructive agent of ancient peace, present beauty and future safety.' 'Thirty years ago,' he says, 'if the schoolboy were five minutes late for his tea, his mother did not turn pale and go to her cottage door with panic in her heart. If the husbandman came home even an hour late because he had stopped for a glass of ale in the Three Horseshoes, his wife did not expect his corpse to be brought to her on a stretcher.' "—K. B. NOAD, *Med. J. Aust.*, Feb. 25, p. 294.

NOTES, COMMENTS, AND ABSTRACTS

DOCTOR AND DENTIST

THE NEED FOR COÖPERATION

By Leslie G. Robinson, D.D.S.

"The next great step in preventive medicine must come from the dental profession." So said a famous medical teacher a few years ago. Thus dentistry found a somewhat untidy and exceedingly troublesome infant on its doorstep. However, parentage was acknowledged and the challenge accepted by a profession then not too well equipped to handle the situation. Recent dental literature shows the tremendous amount of research work that has been and is being done along this line, and reveals that the dentist has advanced far beyond what the physician is accustomed to recognise as the dental field. In spite of this, medicine and dentistry are still not working together in that degree of harmony that would result in the greatest good to their often common patient.

Most people, including doctors, think of dental treatment as having to do only with the extraction of teeth and the restoration of lost tooth tissue. It is true that the greater part of modern dental treatment is concerned with restorative work of a technical nature, but much of it has a very definite connexion with the general condition of the patient, and may have a profound effect upon the work of the physician or surgeon. Whether this effect be beneficial or harmful, can the doctor afford to give it as little consideration as he so often does?

With few exceptions, the attitude of the doctor toward dentistry is that of a person walking along the other side of a shoulder-high stone wall, broken only by gaps representing personal experiences in the dental chair, quickly forgotten. The wall begins to develop when the studies of the medical and dental student separate after their first two or three years, and except where broken down by the more discerning members of the professions it then remains a permanent structure. Perhaps the doctor has become too busy, too concerned with his own immediate problems, so that dentistry, in common with radiology and laboratory work, has come to be thought of as something purely mechanical which can be called on for quite definite results such as might be expected from a highly developed machine. His experience with the variable factor of the human constitution should teach the doctor that with dentistry, as with radiology and other allied branches of health service, there must be something more than a mechanical reference of the patient if the best results are to be achieved. An appreciation of the dental viewpoint, with a few minutes' consultation with the dentist, would bring a higher degree of satisfaction to the doctor and prevent much confusion in the mind of the patient.

Perhaps relations would be improved by the establishment of dentistry as a true specialty of medicine, involving a preliminary complete medical training. That is a debatable point.

THE DENTAL VIEWPOINT

Most doctors assume that the properly trained dentist can be trusted to do his work in such a manner as to endanger the patient's general health as little as possible, and no doubt their trust is usually justified. The greater part of dental treatment performed today is designed to avoid general complications and at the same time to eliminate the injurious effects of worn-out or improperly constructed restorations, and remove those pathological conditions from the investing tissues of the teeth which feed the system with infective material through both blood-stream and alimentary canal. Unhappily in dentistry, as in other professions, there are careless and unscrupulous operators to whom the temporary profit of rapidly done slipshod work is more attractive than the ultimate good of the patient. Sometimes too the demand of an uneducated public for less expensive treatment has resulted in dangerously cheap types of operations and restorations. Whatever the cause, the unfortunate fact remains that much dental treatment is still producing conditions of focal infection that may have a deep effect on general health.

The situation is improving steadily, partly through better teaching in dental schools, but largely because dentists are learning by experience that the most important guiding thought behind all dental treatment must be the elimination and control of infection. We therefore find the conscientious dentist spending much time learning something of the physician's problems—the pathological conditions resulting from inflammation and infection—blame for a considerable share of which, not without justification, has been laid on dentistry.

With the same end in view the modern dentist is paying more attention to asepsis in his own operating-room, often not before it was needed. Medical men called on to administer anæsthetics for dental extractions sometimes see forceps and other instruments used in contact with broken tissue after being taken straight from a bag or wrapping that obviously cannot be sterile. In condemning such slovenly technique doctors must remember that the older members of the dental profession have not had the grounding in aseptic methods that is given as a matter of course to medical students. As these older members retire or learn to mend their ways there is every chance that aseptic operating conditions will become universal.

REFERRING PATIENTS TO THEIR DENTIST

Medical science recognises the fact that indications and contra-indications for appendicectomies and tonsillectomies cannot be listed on paper and accepted as applicable to all types of patients, and it should be as clearly recognised that indications and contra-indications for the removal of teeth may be quite as indefinite. Except in the more advanced degenerative cases, the average doctor is not qualified to judge whether the teeth or their surrounding tissues can be restored to health. The dentist, too, often finds such a decision difficult or impossible without a doctor's opinion on the patient's general condition.

With many desirable exceptions the attitude of the doctor in referring patients for dental treatment reveals the greatest lack of harmony between the professions. Often the medical man is dictatorial or thoughtless. The patient may be sent to the dentist with the demand, expressed only via the patient, that the teeth be removed. The average dentist is almost as well qualified to judge the condition of the tonsils as is the physician or surgeon to judge dental conditions, yet imagine the reaction of the surgeon if a patient appeared with instructions from the dentist that the tonsils be removed!

In the common case where there is a dirty greenish-black deposit of calculus on the teeth with obvious gingivitis, for example, the doctor's hasty judgment may easily be wrong. The picture is not at all pleasant, and the doctor thinks of loose teeth, pyorrhœa: probably a sewer of infection. The patient is packed off to the dentist with instructions—given, mark you, to the patient and not even to the dentist—to have the teeth out at once. The combined demands of the doctor and the patient, who has naturally inferred that once the teeth are out all will be well, are likely to be too much for the resistance of the dentist. The teeth are removed, and all that is attained may very well be indigestion due to the loss of proper mastication, and the misery of attempts to master the use of artificial dentures. Often in such cases the removal of the affected teeth *is* indicated. Again, often such teeth may be saved without the slightest harm to the system, and the patient will avoid much unpleasantness and expense. A wiser decision could be reached by a few moments' consultation between dentist and doctor.

On the other hand, there are many doctors, judging from the appearance of their own teeth as well as those of their patients, who think that the treatment of dental infection is being overdone, and who take no action unless the tissues are highly suppurative.

The doctor should be willing to leave the decision as to what is best done with suspected teeth to the dentist, confident that every effort will be made to eliminate any infection present. If the dentist finds obvious faulty areas, their elimination will usually suffice. If evidence of focal infection still remains, all teeth that could be even remotely suspected may have to be removed as a last resort.

In referring a patient for dental treatment the doctor should ensure that the dentist is in possession of all the relevant facts. The dentist's attention should be drawn to any conditions, such as gastritis, that suggest that septic material from the mouth is being swallowed, or others, such as rheumatism, that suggest the absorption of toxins from hidden foci into the blood-stream. Further, the dentist should be told of any abnormalities in the patient, such as faulty heart action, severe nervousness or hæmophilia, that may affect his decision as to the best line of treatment. The conveying of this information, whether by personal consultation, written report or telephone conversation, should be an invariable routine.

One other important situation that demands the coöperation of doctor and dentist is that of the pregnant woman. How often, even in these enlightened days, do we have visits from the mother of a recently born baby, revealing the most atrocious condition of the teeth. The mother complains bitterly, "but I had my teeth checked over only seven or eight months ago, and they were perfectly all right!" Perhaps the cry may be, "then why didn't my doctor warn me?" When will doctors recognise this particular obligation that rests on their shoulders when a pregnant woman pays her first visit to their consulting-room? An explanation of what happens during pregnancy to the supply of tooth- and bone-building substance; a warning that dental work will be difficult if not impossible in the later stages of pregnancy; and the emphatic advice that the dentist be told of the patient's condition and asked to treat her with that in mind: this should be the routine and would save a tremendous amount of later trouble. The able dentist can do much both to alleviate suffering during pregnancy and avoid the loss of teeth afterwards.

Finally, I suggest that joint meetings of medical and dental societies, such as are already held in some of the larger centres, with open discussions of allied problems, would provide the most effective means of correlating the efforts of both groups for the ultimate good of their patients.

SUMMARY

Patients will not receive the full benefit of modern advances in dental knowledge and technique until there is more effective coöperation between doctor and dentist.

The wider education and outlook of the modern dentist make him fully capable of appreciating the relation between general and dental disease, but he is often handicapped by lack of information on the patient's medical history.

The doctor's training does not fit him to advise on dental treatment except in general terms, and he only hampers the dentist by attempting implicit instructions.

When referring a patient for dental treatment the doctor should supply the dentist with a complete account of the patient's condition as far as it may be due to dental sepsis or may complicate treatment, and should leave the dentist to decide the details of treatment.

New Westminster, British Columbia.

POTTED ANTHROPOLOGY

Mr. Graubard [1] is a worshipper of the gene—a gene "somewhat larger than a molecule," a gene that "may now be seen under a microscope"—a very real gene indeed, and he gives a good account of the modern theories of genetics and of the implications that naturally arise out of them. In places his biological dicta are a little difficult to follow and we find a real stumbling-block in the statement that "The chicken did not lose its power of flight because it was domesticated. On the contrary, it became domesticated because it could not fly." In dealing with psychology, the author will have nothing to do with Freudian teaching, of which he says, harshly: "it is neither an approximation to truth nor a stimulating guess, but mere gossip and folly"; but he gives high place to Watson's work on conditioning of reflexes, and by the term reflexes is implied an arc created by "breaking down resistances in some synapses and blocking others." As for cultural anthropology, chap. 9 follows so closely upon the lines of chap. 8 of Kroeber's "Anthropology" that one naturally looks for but fails to find some acknowledgment.

The book leaves the reader a little breathless, as though he had been whirled at a great pace over an extensive tract of country in a high-powered car. He has the impression of scenery upon which he might care to gaze awhile flashing by so fast that in the end he sinks back, exhausted, realising that it is quite impossible to dwell upon or consider any feature so long as the driver keeps his foot on the accelerator. It may be that this feeling is due to such sentences as "Now that we are all secure and comfortable in evening dress and pyjamas, with toothbrushes, baths, submarines, codes of laws, tissue-paper, lipstick, poison gases, rules of etiquette, and what not." This sentence is taken from page 6, but it is paralleled or even beaten by dozens of others scattered through the book. It would, perhaps, be gratuitous to criticise at all severely a book obviously intended for the section of the public that prefers high-pressure expositions of modern science. But in the historical scurry of chap. 1. we note that Servetus

1. Man the Slave and Master. By Mark Graubard. London: J. M. Dent and Sons. 1938. Pp. 366. 10*s.* 6*d.*

is still served up as a scientific martyr and Sir Francis Bacon regarded as the redeemer of science despite the fact that the scientific ideas of the one had nothing whatever to do with his burning and that the other openly scoffed at the theories of Copernicus and treated with contempt the researches of Galileo Galilei and William Gilbert. We cannot honestly endorse the eulogies of Sir Arthur Keith or of Prof. Lancelot Hogben attractively set out on the dust-wrapper of this book, though amid a vast array of platitudes presented in epigrammatic form it undoubtedly contains much common sense.

REDISCOVERY OF JENNER PORTRAIT

THE earliest known portrait of Edward Jenner was painted in oils on wooden boards by John Raphael Smith in 1800 and exhibited in the same year at the Royal Academy. Smith was born in 1752, son of Thomas Smith the landscape painter, and besides being a painter he was a mezzotint engraver; in fact this portrait was used by Edward Scriven (1775–1841) for making the well-known mezzotint engraving of Jenner (illustrated in THE LANCET, 1923, **1**, 139). Two other portraits of Edward Jenner are known, one by Sir Thomas

Lawrence and another by James Northcote (now in the National Portrait Gallery). Smith's portrait was lost for many years, but it has at last come to light again at an obscure country sale. It had been presented by Jenner to his oldest friend, Dr. Hicks, whose two children he had vaccinated on Oct. 27, 1798. Later, Dr. Hicks's sisters gave it to Dr. Theodore Davis, of Beachcroft, Clevedon, Somerset, who died there on Aug. 11, 1909, aged 75. On the back of the portrait are two labels. One, in the handwriting of one of the sisters, reads: "We give and bequeath this picture to Dr. Theodore Davis.—Emma, Julia, and Mary Hicks." The other reads: "Presented to the late Dr. Theodore Davis, M.D., F.R.C.S., of Bart's Hospital, and Clevedon, Somerset, husband of the present owner, by Emma, Julia, and Mary Hicks, personal friends of Dr. Jenner, who had presented it to them." The portrait, shown in the accompanying illustration, is now offered for sale at £150 by E. P. Goldschmidt and Co.

THE TREATMENT OF BURNS

THOUGH absorption of depressor substances into the blood-stream is at present rather out of favour as an agent in producing traumatic shock it is still seriously considered in relation to shock from burns and from intestinal obstruction. J. B. Devine,[1] however, who has tried to deduce from experimental findings conclusions which will help him to diminish shock from burns, regards toxæmia by absorption from the burnt area as an unnecessary conception. He finds it difficult to decide on the relative importance of fluid loss and nervous stimuli and therefore tries to eliminate both. He gives fluid to counteract the increased viscosity of the blood, which is one of the best-established effects both of clinical and experimental shock, and morphia and an application designed to alleviate pain locally to combat any nervous factor. In spite of his disbelief in the toxic-absorption theory he uses for this purpose a coagulating agent and prefers gentian-violet to tannic acid mainly because it gives greater relief from immediate pain and is a better antiseptic; he attributes shock delayed for more than a few days to sepsis. He does not find that much cleaning of the burn is necessary; all that need be done is to remove the dead skin before applying the coagulating agent. After separation of the scar vitamin A in the diet and the application of cod-liver oil hasten healing.

MURDER ON THE CRUMBLES

Irene Munro, a London typist on a solitary holiday at Eastbourne in August, 1920, left her lodgings one Thursday afternoon and never returned. Next day a schoolboy tripped over something on the shingle of the Crumbles beach between Eastbourne and Pevensey. It was a human foot in a black stocking. Underneath the shingle was the typist's body with terrible injuries to the head, probably inflicted by a lump of ironstone found six feet away and afterwards seen to bear bloodstains. Her handbag was missing; a bunch of keys which it contained was picked up in the vicinity. Here was murder—but by whom, when, and from what motive? Set to make bricks without straw, the police had to piece together as best they could the movements of this girl in the dark green coat with the fur trimmings and to discover her companions. Field and Gray, the two men eventually hanged for the murder, might perhaps have saved their necks if they had not made mistakes in covering their tracks and concocting false alibis. The case for the prosecution was in itself by no means overwhelming.

The main contribution of the medical witnesses was the estimate of the probable time of the girl's death on the Thursday. The police surgeon, looking at the body at 11 P.M. on the Friday by the light of an acetylene lamp, thought that death had occurred 24 hours earlier. Blood had run from the nostrils as he moved the body; he would not have expected this, he said, if the girl had been dead for more than 24 hours. But when 5 days later Dr. R. R. Elworthy, pathologist to the West London Hospital, made a post-mortem examination, blood again flowed from the nostrils on the moving of the body. The medical evidence at the trial was summed up by the judge as consistent with death having occurred on the Thursday afternoon. The point was important. Field and Gray were seen with Irene Munro going towards the beach in the afternoon; they were both back in the bar of the Albemarle Hotel at Eastbourne by 6.30 P.M. If the murder was committed late at night, their innocence was established.

Miss Winifred Duke, who edits the case in the Notable British Trials series,[2] writes an admirable introduction. It is not the fault of so expert a

1. Devine, J. B., *Med. J. Aust.* Jan. 7, 1939, p. 14.
2. Trial of Field and Gray. Edited by Winifred Duke. Notable British Trials, Vol. 67. London: W. Hodge and Co. 1939. Pp. 302. 10*s.* 6*d.*

criminologist that the forensic aspect, like the medical, was devoid of sensation. Field gave evidence on his own behalf and faced the cross-examination of Sir Charles Gill. Gray was defended by Sir Edward Marshall Hall who decided not to put his client into the witness-box—a fact on which the judge (but not the prosecuting counsel) could comment. Mr. Justice Avory made a masterly summing-up. The evidence was entirely circumstantial, but none the worse for that. Field and Gray had admittedly been together all the afternoon and evening on the fatal Thursday. Both, it seemed, were innocent or both were guilty. The jury found them both guilty, but added a recommendation to mercy on the ground that the crime was unpremeditated. The case went to the court of criminal appeal, which took the most unusual step of allowing the two prisoners (and other witnesses for the defence) to give evidence, thus letting Gray go into the box on the appeal though he had not done so at the trial. Counsel for the Crown raised no objection; it was a fresh chance for a deadly cross-examiner. The wretched men now sought to exculpate themselves by throwing the sole blame on each other. The appeal was dismissed. Neither Field nor Gray made any confession; Miss Duke notes the influence of crime on a sensation-loving public in the fact that both left messages of gratitude for letters of sympathy sent them while they were awaiting execution. Chance, as she observes, plays a large part in the detection of murder. If Irene Munro's attackers had stayed to bury that betraying foot a little deeper, the victim might have lain in her shingly grave till all danger to them was past.

ANGLO-YUGOSLAV CHILDREN'S HOSPITAL

SOON after the late war Dr. Katherine Macphail started this hospital in an old disused military barrack with equipment and supplies begged from the British and other missions in Belgrade. Since then the hospital has changed its name and its abode several times, but its purpose has always been to give the right kind of help at the time and place where it was most needed. As a general hospital for sick children it treated 170,000 patients and trained over 200 pupil nurses. As the Jugoslavian health services developed other general hospitals were opened. But the incidence of tuberculosis in the country is one of the highest in Europe, and in 1934 the Anglo-Yugoslav Children's Hospital moved to its present home at Sremska Kamenica to work as a special hospital for the treatment of tuberculous diseases of the bones and joints. It has 50 beds and last year it treated 117 inpatients and 490 outpatients. The hospital costs £3000 a year to run and of this over £2000 is contributed by the country itself. The remainder, apart from a generous donation from the Save the Children Fund, has to be raised by private subscription. In her twentieth anniversary report Dr. Macphail, who is still medical superintendent of the hospital, appeals for help and points out that it is those who are most generous to their own children who are most generous to foreign children.

EXERCISE UNDER WATER

Mr. T. R. Togna, whose system of home gymnastics is described in a little book,[1] persuaded Dr. G. P. Crowden to carry out some experiments for him. These showed that during the exercise of arm- and leg-bending nearly twice as much oxygen was taken up in air as when the same exercise was carried out under water, and in the exercise of trunk-raising nearly three times as much oxygen was required in air as in water. This implies that exercises can be carried out in a bath with much smaller expenditure of energy on the part of the heart and blood-vessels than in the ordinary air. The author has taken a lot of trouble in devising schemes of exercises to be carried out in the domestic bath, and gives abundant descriptions and photographic illustrations of these exercises. His system opens up a new field of treatment for patients with circulatory and respiratory disorders for whom exercise of muscles and joints is desirable. The exercises could be performed with advantage by healthy people, particularly those doing sedentary work. The cover of the book is waterproof, to prevent damage from splashing.

1. Exercises in the Bath. By T. R. Togna. London: G. P. Putnam's Sons. 1938. Pp. 125. 5s.

WITCH'S MILK

Dr. Pierre Forsell (*Acta pædiatr. Stockh.* 1938, **23**, suppl. 1) has written an interesting monograph on the so-called witch's milk, the mammary secretion of essentially the same composition as adult milk commonly seen in infants in the first few weeks of life and sometimes as late as the third month. He deals both with the clinical manifestations of this curious but harmless phenomenon and also with the histology of the mammary changes in children who have died. He finds that on the whole babies small at birth tend to secrete less milk than big babies, and he discusses various other influences such as the health of the mother on the appearance of witch's milk. There is a good list of references.

NEW PREPARATIONS

NICAMIDE.—Under this name Burroughs Wellcome and Co. (Snow Hill Buildings, London, E.C.1) prepare a 25 per cent. solution of nicotinic acid diethylamide. Given by mouth or by intravenous or intramuscular injection it is said to increase the depth and rate of respiration and the force of cardiac contraction; it acts wholly through the central nervous system and raises the blood-pressure probably through stimulation of the vasomotor centre via the carotid sinus. Its use is recommended in states of shock and circulatory or respiratory depression—including pneumonia, coronary thrombosis, narcotic poisoning and failure of breathing during anæsthesia—and also after surgical operations to prevent pulmonary or circulatory complications. In asphyxia neonatorum it is considered especially valuable "on account of its therapeutic range of dosage and its relative lack of toxicity."

CAROVIT tablets are described as a combination of chlorophyll and beta/carotene (the precursor of vitamin A). The manufacturers (Continental Laboratories Ltd., 30, Marsham Street, S.W.1) state that the action of these two substances is enhanced by their association and claim that chlorophyll "raises the general tone of the body," increases red blood-cells, lowers high blood-pressure, and is useful in arteriosclerosis, while vitamin A combats infection of mucous membranes. The formula of the tablets is given as: Carovit chlorophyll 0·01 g., ferri phosph. solub. 0·008 g., calc. phosph. 0·06 g., saccharose ad 0·125 g.

VEGUVA Nos. 1 and 2 are two new foods for infants. No. 1 "consists of a basis of cows' milk to which is added a mixture of specially prepared carbohydrates. Additional protein is supplied in the form of readily soluble sodium caseinate, and lipoids and vitamins in the form of egg-yolk; yeast supplements the vitamin B complex. To this preparation is added the juices of carrot and tomato." The resulting powder is to be mixed with water and used as the complete diet of the child until the age of three months. Veguva No. 2 Vegetable Adjuvant, which is given thereafter (together with milk and later with cereals), has a basis of spinach, carrot and tomato in finely divided form. It also contains added carbohydrates, egg-yolk, yeast, banana flour, and a small quantity of glycerophosphate. The makers are A. Wander Ltd. (184, Queen's Gate, S.W.7).

MALAYAN MEDICINE

A MEMBER of an Irish Huguenot family which for several generations has sent its sons into the medical profession, the late Dr. John Desmond Gimlette qualified in 1890 in England and also in Portugal. His original intention was to practise at Lisbon, but in 1896 he was appointed surgeon-magistrate at Selensing, Ulu Pahang, and became interested in tropical medicine. He wrote articles on latah, a psychopathological condition common in Malaya, and on other diseases prevalent there, and a book on Malay poisons and charm cures. Dr. Gimlette was well on towards completion of another work when he died in 1934, and Mr. H. W. Thomson undertook to finish it. This is the history of an unusual book which has now been published.[1] It is a Malay-English dictionary of ailments, native simples and other remedies, and anatomical terms, together with an English-Malay index and two plates of the anterior and posterior aspects of the human skeleton. Sir Malcolm Watson, director of the Ross Institute of Tropical Hygiene, has contributed a foreword which contains an appreciation of Gimlette and his work.

THE TECHNIQUE OF MASSAGE

YEARS of teaching experience provide Miss E. M. Prosser with an excellent background for the production of a detailed manual[2] for the use of candidates for the examination of the Chartered Society for Massage and Medical Gymnastics. Others, including some medical men, will also profit from the descriptive details of the actual manual technique of massage, and of the exercises in common use. The numerous line drawings illustrating these are apt, and on the whole accurate, though it would be a technical fault to leave the lumbar region badly supported as in the figures on p. 82. From an examination standpoint Miss Prosser gives good advice and orthodox explanations of the effects of the manipulations and movements; from the broader educational aspect it is a pity that the student is not encouraged to use her brains and to relate the facts given so as to be able to apply them to a variety of cases. In the chapter on spinal deformities, for example, the exercises are clearly presented, but the reader is given no grasp of the subject as a whole, no analysis of the mechanics and causes of the deformity. She is likely to memorise and apply these exercises by rote instead of gaining an intelligent insight into the problem she has to tackle. A minor error is that of attributing the origin of the term "semaphore exercises" to Dr. Anna Broman.

Though the student's imagination is not stimulated, the straightforward description of practical methods in this book will certainly be appreciated.

A POISON STORY

So many doctors in modern fiction have a bad name that it is not surprising to read of one threatened with the gallows.[3] Dr. Radcot, a country practitioner lamentably lacking in discretion, was married to a chronic invalid but in love with the wife of the local squire. The invalid dies suddenly and is buried but later exhumed. Arsenic being found in considerable quantity in the stomach and lungs, suspicion falls not unnaturally upon the doctor, who meanwhile has married the second lady, after her divorce. The doctor has three enemies who might have encompassed his downfall had they not been thwarted by the efforts of a friend retired from the C.I.D. There is sound toxicology in this novel, the plot is ingenious, but the characters are wooden and incredible. In real life Dr. Radcot, in view of his gossip-provoking behaviour, would hardly have contrived to hold together any sort of practice.

1. A Dictionary of Malayan Medicine. By John D. Gimlette, M.R.C.S., and H. W. Thomson, M.C.S. (retd.). London: Humphrey Milford, Oxford University Press. 1939. Pp. 259. 7s. 6d.
2. Manual of Massage and Movements. By Edith M. Prosser, T.M.M.G., sister in charge of the massage department, Middlesex Hospital. London: Faber and Faber. 1938. Pp. 318. 12s. 6d.
3. Death of the Doctor's Wife. By Whyte Hall. London Quality Press. 1939. Pp. 320. 7s. 6d.

TOBACCO THERAPY

WRITING in the Argentine journal *Accion Médica* for Feb. 10, N. Hughes mentions that Nicot used the leaves to cure his cook's cut finger, and that later the prior of Lorena, who received a plant from Nicot, gave some to Catherine of Medici, whose hobby was medicinal herbs. It was not long before snuff was made in France for curing headaches and removing "humours." Smoking was used to cure asthma, and even infusions of tobacco were taken. Tobacco was regarded as an antidote to the poisonous arrows of the Indians, although tobacco was an ingredient in that very poison. Ferdinand II of Aragon, anxious to preserve the lives of his explorers in America, instituted pharmacological tests. A dog was wounded with a poisoned arrow, and tobacco juice poured on the wound saved the dog's life. Cataplasms were applied to relieve indigestion and torticollis. Powdered finely, tobacco was used as a disinfectant, and during the plague of 1665 the scholars of Eton were thrashed if they did not smoke before coming into the classrooms. Tobacco was used as both a stimulant and a sedative, until it was found to have a toxic action. Enemas of tobacco smoke were administered through special bellows, and tobacco was used as an adjuvant to mercury in the sweating baths for syphilis.

THE ADOLESCENT GIRL

A Roman Catholic woman doctor, who obviously has a wide experience of and sympathy with the young, writes on "growing up" mainly for girls of her own faith; her book has a strong religious background.[1] The accounts of the development of body and mind during adolescence and of the procreation of children are simple and clear. Extramarital intercourse is condemned as "a mortal sin," and to become a good wife and mother is extolled as being the highest aim of womanhood. The author lays down a sensible, if perhaps idealistic, code of behaviour for young women in their dealings with the opposite sex.

LOTHEISSEN'S OPERATION

Prof. G. GREY TURNER writes: On my desk before me I have a reprint from the *Zentralblatt für Chirurgie* in which the name of this Viennese surgeon is spelt with a double "s," but better evidence still is a letter from him to me with the double "s" in the signature. As your readers may infer Lotheissen is one of my friends and I much respect his numerous contributions to surgery. None the less I think we ought to bear in mind that the operation for femoral hernia by the inguinal route was independently devised and described by R. H. Parry when surgeon to the Victoria Infirmary in Glasgow (see *Brit. med. J.* 1901, **2**, 1136).

PSYCHOLOGICAL FACTORS IN RHEUMATISM

Dr. S. D. MITCHELL writes: Your issue of April 1 (p. 802) contains an account of a meeting at the St. John Clinic at which I was a speaker. I should like to amend certain statements, which I am incorrectly reported to have made. The psychiatric study of the personalities of patients with rheumatoid arthritis showed an excess of schizoid features, especially morbid anxiety. I was impressed by the frequency of emotional disturbances within one month of the onset of rheumatoid arthritis, not of arthritic conditions generally.

1. Growing Up. A book for Girls by a Catholic Woman Doctor. London: Burns Oates and Washbourne. 1939. Pp. 47. 1s.